WESTERN INDUSTRY

• *Not a stack of gigantic books, but aluminum ingots from one of the West Coast's reduction plants. For details see page 5.*

MAY
1950 VOLUME XV
NUMBER 5

MATERIALS HANDLING NUMBER

✔ **14 features about storage, stowage, handling and moving of unit loads, palletized goods, bulk materials, and containers, by conveyors, tramrails, cranes, elevators, fork lifts, on trucks, railroads, and ships, by men in the materials handling field who use that equipment, move those items, and do the job.**

There's more to a Wirebound box than wood, wire and price!

Experience, manufacturing facilities and container know-how result in sound engineering, prompt service, dependability. Cabco has been manufacturing wooden containers since 1883. Facilities embrace every operation from logging to the finished wirebound. Cabco is the West's recognized leader in designing, developing and supplying wooden shipping containers.

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Cabco wirebounds fold up quickly, easily, ready for immediate use on the packing line.

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This Month in WESTERN INDUSTRY

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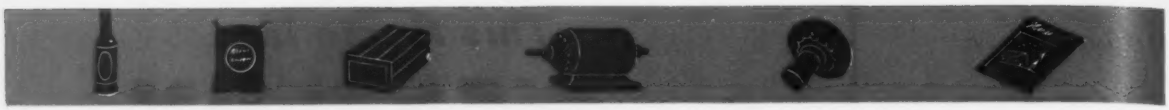
Front Cover

When ingots of aluminum "pig" go through the rolling process, they first must be "scalped" to eliminate surface irregularities, a painless process that does not cause the "pig" to squeal at all. Here the top ingot is being lifted off to go into the scalper at the Kaiser rolling mill in Spokane, Washington.



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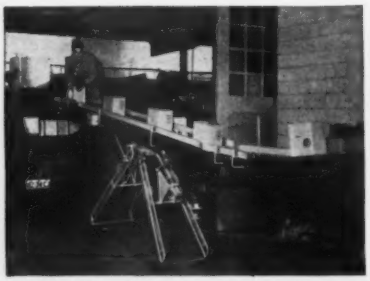

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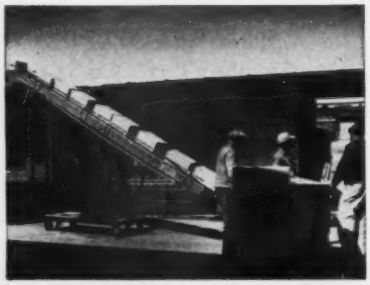
FLOOR-VEYOR — Floor to floor movement, heavy materials. Ideal for attic storage.



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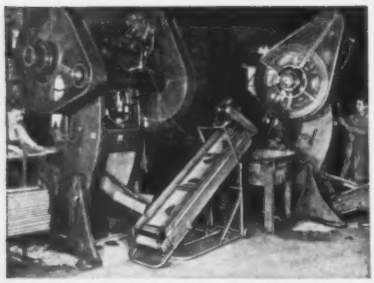

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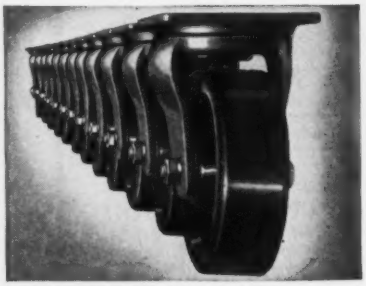

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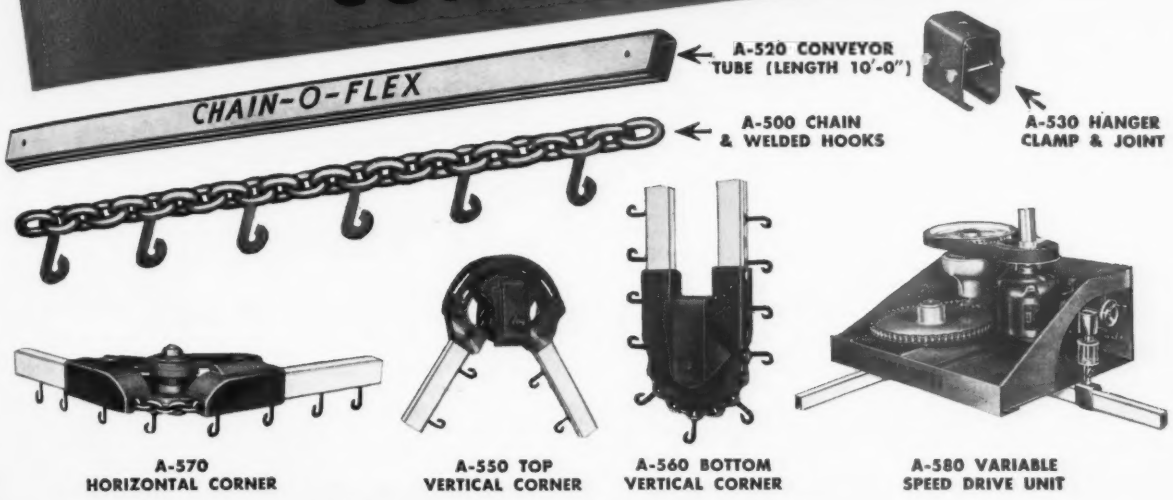
Because of this flexibility, UNOBA *simplifies* lubrication. It performs on jobs formerly requiring *many* different types, grades and brands of grease. This results in reduced inventories, smaller storage space, less chance of using the wrong lubricant, and lower maintenance costs to you.

For *full* information, call your local Union Oil Representative, or write Sales Department, Union Oil Company, Los Angeles 17, California.

76 UNION OIL COMPANY OF CALIFORNIA

CHAIN-O-FLEX CONVEYORS


CHAIN-O-FLEX
A-520 CONVEYOR TUBE (LENGTH 10'-0")
A-530 HANGER CLAMP & JOINT
A-500 CHAIN & WELDED HOOKS
A-570 HORIZONTAL CORNER
A-550 TOP VERTICAL CORNER
A-560 BOTTOM VERTICAL CORNER
A-580 VARIABLE SPEED DRIVE UNIT

THE PARTS ILLUSTRATED ARE THE COMPONENTS USED TO MAKE UP A COMPLETE CHAIN-O-FLEX CONVEYOR. EACH UNIT IS PACKAGED. ERECTION IS A SIMPLE JOB FOR ANY MECHANIC SINCE ALL PARTS ARE BOLTED TOGETHER.

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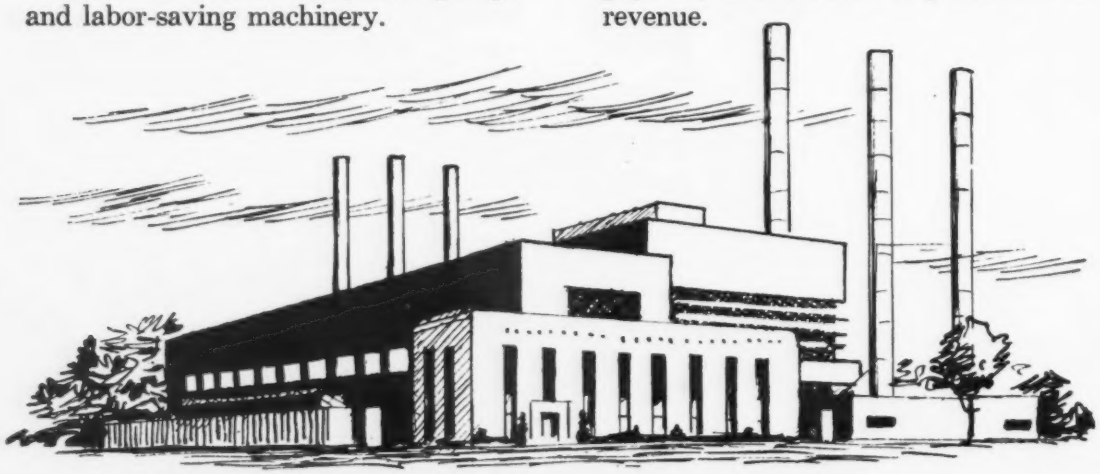
What's behind this headline?

"Nation's biggest power building program"

Now pouring 169,000 horsepower into P. G. and E. lines is this new Rock Creek hydro-electric generating plant, just completed.

Now in its fifth year, P. G. and E.'s expansion program still goes full speed ahead. Here's what that means to five million people in Northern and Central California:

1. New industries are attracted here by abundant, dependable power at rates among the lowest in the nation.
2. Farm production and income stay high —thanks to electric irrigation pumps and labor-saving machinery.
3. Employment is stable for P. G. and E.'s 17,000 employees who last year received almost $69 million in wages.
4. Local merchants benefit from this giant payroll, too... for employees spend their wages in their own communities.
5. Federal, state and local governments receive support from P. G. and E. which pays 19¢ in taxes for every dollar of its revenue.



First unit of Moss Landing Steam Plant is on the job, adding 134,000 new horsepower. Two more units will open in Spring '51.

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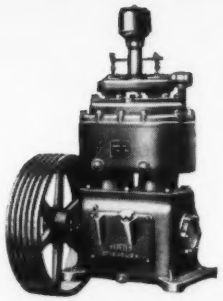
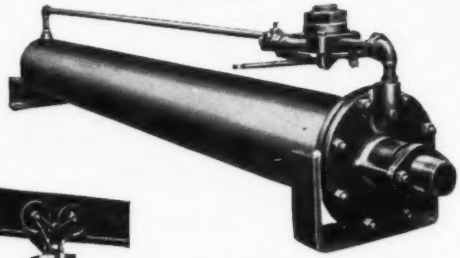


Model C Water-Cooled Compressors, up to 50 H.P. Fully Enclosed — Dust and Dirt Proof — Carbon-free Valves. Timken Bearings.



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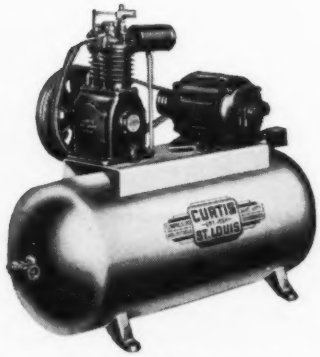

Curtis Model F Air Compressors are available as either electric or gasoline motor-driven units (electric motor-driven portable or stationary). Up to 10 H.P.

Industrial plants throughout the country are using Curtis Compressors, Hoists, and Cylinders to reduce production cost through manhours saved.

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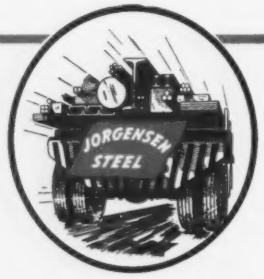

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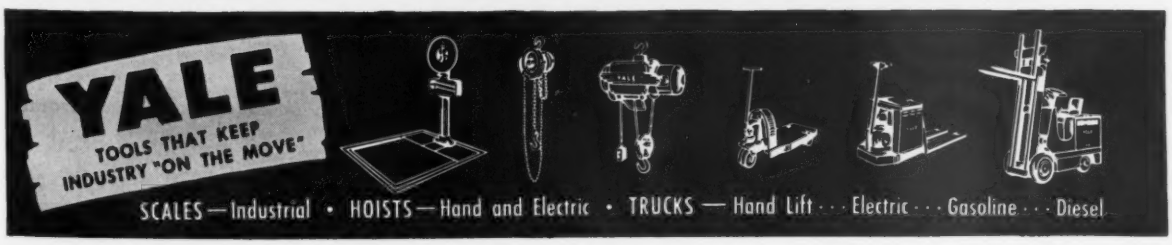
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TOOLS THAT KEEP INDUSTRY "ON THE MOVE"
SCALES—Industrial • HOISTS—Hand and Electric • TRUCKS—Hand Lift · · · Electric · · · Gasoline · · · Diesel

YOU CAN BE **SURE**.. IF IT'S

Westinghouse

ELECTRICAL MANUFACTURING—IN THE WEST, FOR THE WEST

The zooming Western electrical business got a big boost in 1947 when Westinghouse took over the 57-acre Joshua Hendy plant at Sunnyvale, California. Shown above—a main manufacturing aisle. This is the largest electrical plant west of the Rockies. Row after row of precision machines turn out everything from small motors to giant turbogenerators. And facilities are diversified; Sunnyvale makes marine, steam and hydraulic equipment as well as electrical.

Sunnyvale and seven other Westinghouse plants produce *in* the West, *for* the West—boosting income, cutting freight costs, pushing growth.

Why has the Western labor force almost doubled in ten years?

Count up the production workers in the West—the men who turn out the goods. Since 1939 they've increased by 80%, almost double. The over-all U.S. gain: 53%. On this yardstick, Western industry is growing 50% *faster than the U. S. average.*

Why the big boom? Because the West has raw materials, topnotch labor, and plenty of purchasing power. And with this industrial growth, more needed goods are made at home; and capital to finance *still more* new industry is generated (since 1939 Western bank deposits have quadrupled!).

All kinds of industry have helped spark the boom and Westinghouse is proud to be one of them. Electrical manufacturing is one of the West's fastest growers. Since 1939 its production workers have increased *four times,* its productive value *six times.* The biggest producer of all in this booming Western industry is the Westinghouse plant at Sunnyvale, California. And seven other Westinghouse plants in the West do their share to brighten the picture.

All these Westinghouse plants turn out cost-cutting electrical equipment that helps other industries grow. And they supply the apparatus to generate the power that every industry needs.

As a big factor in Western growth Westinghouse is a good company for you to do business with. The West in our name really means something. When you have a job for electricity to do, get in touch with your nearest Westinghouse office.

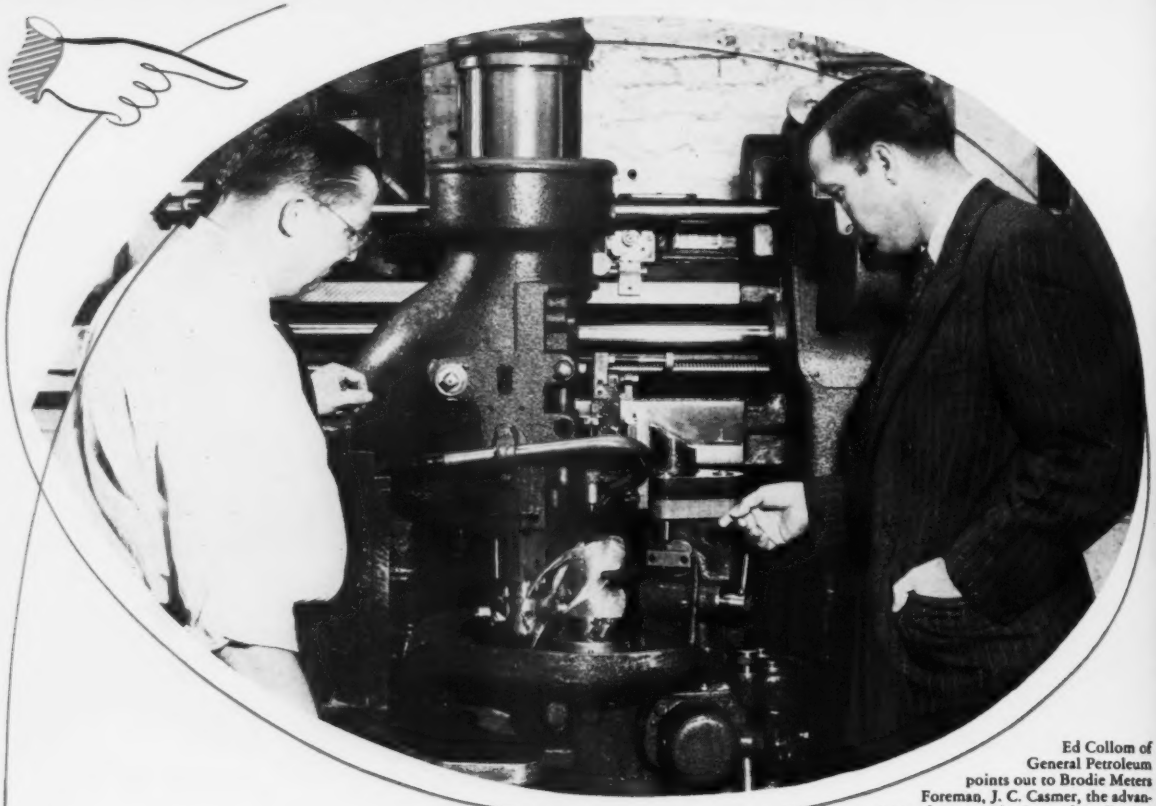
J-94833

Westinghouse

A MAJOR FORCE IN WESTERN GROWTH

WESTINGHOUSE

PLANTS AT BERKELEY, DENVER, EMERYVILLE, LOS ANGELES, PORTLAND, SALT LAKE CITY, SEATTLE, SUNNYVALE



Ed Collom of General Petroleum points out to Brodie Meters Foreman, J. C. Casmer, the advantages of correct selection and application of a cutting oil on the Fellows Shaper.

Oil helps make the meters...

that measure oil

Brodie Meters are used to measure petroleum and other liquids in almost every part of the world. It is essential that they be accurate and trouble-free under all possible conditions. The outstanding performance and dependability of Brodie Meters is largely the result of careful workmanship and precision methods employed in the modern Ralph N. Brodie Co. plant at Oakland, California.

Brodie Meters serve General Petroleum Corporation as well as most other oil companies here and abroad. Here a Brodie BiRotor Truck Meter measures gasoline being delivered to a Mobilgas station.

An important assist in the operation of this plant goes to General Petroleum lubrication, and lube engineering service used in the Brodie plant. Lubricants used and service intervals are based on a complete survey by G. P. engineers. This survey resulted in the specification of proper oils and greases to fill each requirement. At the same time it provided the data necessary to prepare an efficient preventive maintenance schedule and made possible important economies in the number of products required, thereby reducing inventories and handling to a minimum.

Take Advantage of this G. P. Service

The G. P. Lube-Engineer is an expert trained to save you money through proper lubrication. The preventive-maintenance program he will put into effect for your equipment will result in longer machinery life, simplified lubrication methods, less buying and stocking problems.

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using nature's gift to better mankind

Pioneering by RB&W

The story of the tough, sound accurate nut of today really goes back to 1847. In that year, William E. Ward invented the *first* automatic cold-header for bolts. The new machine produced a product stronger and cleaner than any bolt previously made. This development pointed up the need for an accurate nut of comparable qualities. But nut-making is a much more difficult and advanced science than the processing of bolts or screws.

Although a number of machines were designed in the meantime, it was not until shortly after the turn of the century that any revolutionary progress was made. By then, RB&W engineers had perfected the *first* automatic machine for cold-punching nuts.

Prior to this time, iron nuts had been cold-punched on hand-fed machines but this step marked the advent of the steel nut as well as the development of the first fully-automatic machine in this field. Here, finally, was the nut for which industry had been clamoring—a safe strong product, superior in everything but finish to any nut then on the market.

Tougher wrenching surfaces and improved appearance, later resulted with the addition of burnishing to the cold-punching operations. Today, through continuous refinement and improvement, it is recognized that RB&W quality sets the standard for cold-punched nuts throughout the world.

Over twenty years ago at its Port Chester plant, RB&W men built the first machine for *cold-forming* nuts from round wire. This process in which the nut is cold-upset produces a high quality nut of superior appearance.

Tapping is a vital part of the nut manufacturing process, so naturally RB&W engineers also contributed to improvement in this field. They developed the first automatic tapper and were responsible for introducing new principles in tapping which made possible greater accuracy in pitch and lead.

Thus, all RB&W developments have contributed to the objective of providing a wider range of high quality nuts to meet the varied requirements of today's industrial needs. And RB&W's policy of "continuous pioneering" is at work today on processes that will contribute new and greater fastener advancements in years to come.

New shop completely equipped with latest cold-forming nut machines.

Battery of machines cold-punching nuts from rectangular stock.

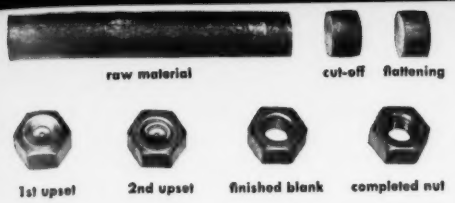
It is a far cry from the early RB&W cold-punched nut machine to today's great single purpose nut plant at Coraopolis, Pa. This plant is equipped to make one product only—*nuts*. The management at Coraopolis has one aim—one responsibility—the continuing improvement in quality and strength of this product.

RB&W has invested hundreds of thousands of dollars in research and development work on nuts and it has expended millions to translate these developments into up-to-the-minute machinery for nut production. No expense has been spared to provide equipment versatile enough in scope to make any size and style of nut—from No. 4 machine screw nuts to semi-finished nuts up to $6\frac{3}{4}$ in. across the flats.

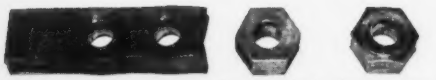
At Coraopolis, one will find RB&W maintaining its leadership in the cold-punched nut field with the most modern machines. Each machine—cold-punches holes in rectangular bars, cuts off the nut blank, forms the chamfer, retrims, repunches to improve the hole and burnishes the sides. This process of manufacturing cold-punched nuts serves as an absolute inspection for safety and soundness . . . a guarantee of dependability.

Characteristic of RB&W's pioneering leadership is the latest addition to the Coraopolis plant—an entire new building equipped with today's refined versions of the

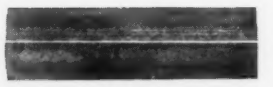
ACCURACY AND STRENGTH OF RB&W NUTS REDUCE

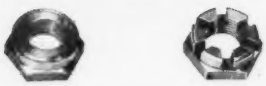


COLD FORMING



COLD PUNCHING





MACHINING

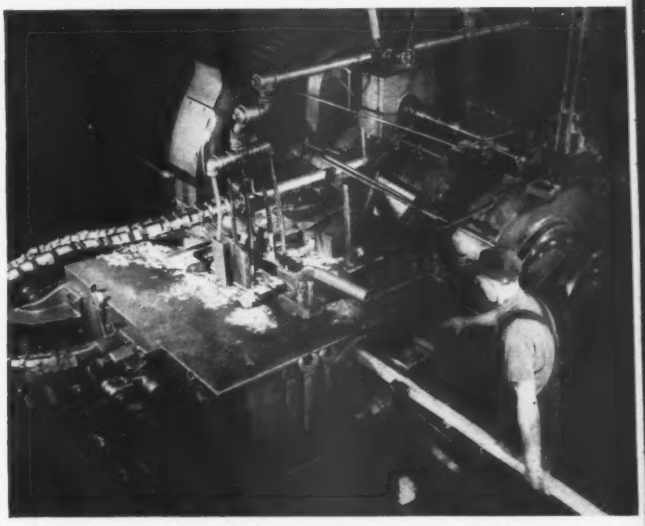
early cold-forming machine. This battery of machines takes wire from coils and delivers perfectly formed nut blanks ready for tapping.

For small runs, specials, and materials which cannot be cold-worked, RB&W's Port Chester and Coraopolis plants are both equipped with fine automatic screw machine departments. The diversified talents of RB&W men and the variety of equipment are readily adaptable to the most specialized need for special purpose nuts such as collar, slotted, etc.

These facilities and the know-how of four generations of RB&W men and women are key reasons why RB&W Nuts are the choice of "top name" manufacturers whose reputations depend upon quality, whose profits depend upon manufacturing economies. Realizing that performance is the cost that counts in a fastener, these firms choose RB&W for the accuracy and uniformity that help keep assembly costs low . . . and also for the strength and appearance that their quality standards demand.

RB&W Nuts, like RB&W Bolts, Screws, Rivets and other fasteners, are the product of 105 years of engineering and manufacturing experience *devoted solely to fasteners* . . . of an unrivalled tradition of craftsmanship . . . of many millions of dollars invested in manufacturing facilities of the latest design.

One of a complete battery of cold nut-formers.



World's largest cold-punched nut machine producing 1½ in. nuts.

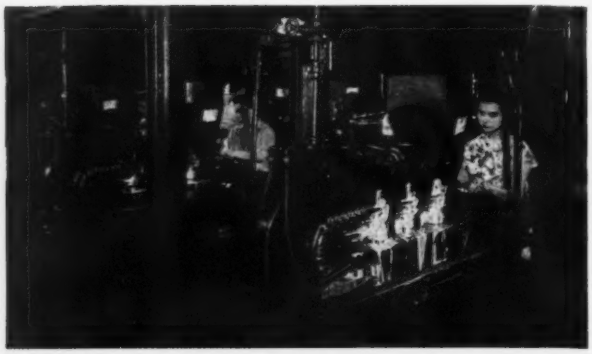
Screw machines handling small runs and special materials.

YOUR COST WHILE PROTECTING YOUR REPUTATION

Assembly Speed, Load Capacity Are Built Into RB&W Nuts

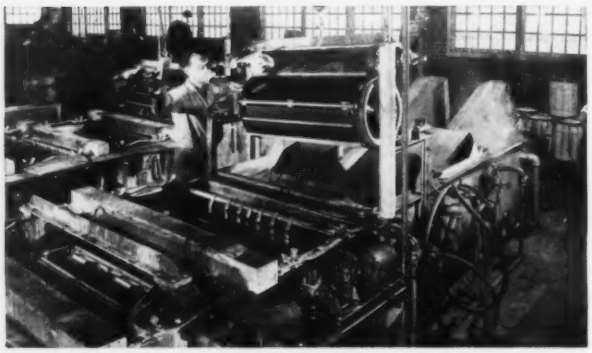
Customers get more for their money when they buy the superior strength, accuracy and finish of RB&W Nuts . . . and also get freedom from assembly troubles and the permanent dependability assured by the investment of more than a century in equipment, research and know-how.

Quick Run-On. Greater accuracy of lead, thread form and pitch diameter—resulting in faster engagement and reduced assembly time—is assured on these RB&W tappers.



This slotter illustrates the character of RB&W's secondary equipment. Many new machines for special work round out facilities for producing nuts for a wide variety of applications.

These carburizing furnaces for surface-hardening are one of the many types of equipment in which nuts and other products receive specialized treatment dictated by customers' individual requirements.



One of RB&W's plating departments. It is equipped for hot galvanizing, electrolytic plating, lead coating, Parkerizing, Cronak finishing, etc.

A glimpse of the tonnage passing through production daily at Coraopolis. Modern materials-handling equipment, including overhead transportation systems, speeds up work and facilitates prompt deliveries.

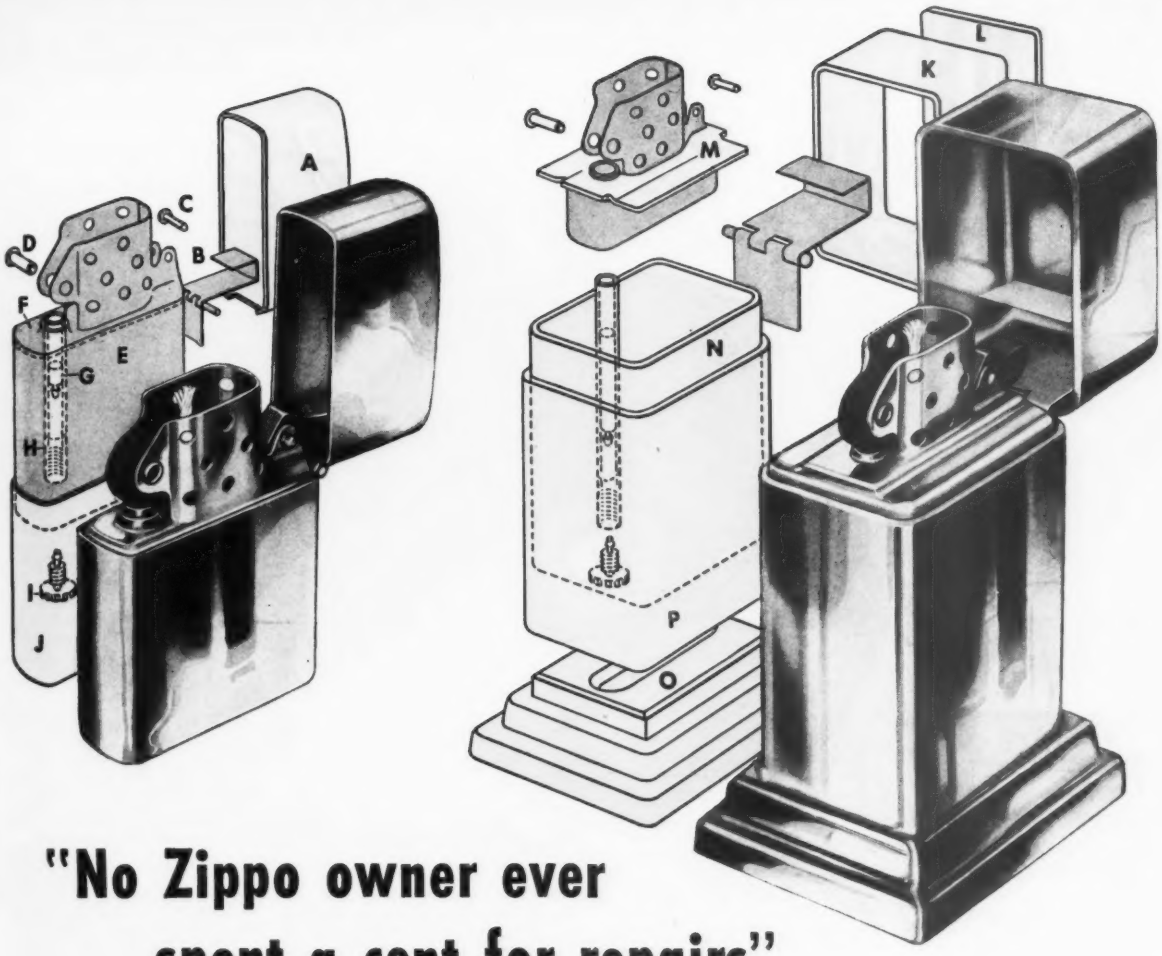
In order to give fast service, RB&W builds up immense stock of a great variety of types, sizes and finishes. Photo shows section of the shipping department at Coraopolis handling rail deliveries.

RB&W
The Complete Quality Line

RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY

Plants at: Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill., Los Angeles, Calif. Additional sales offices at: Philadelphia, Detroit, Chicago, Chattanooga, Oakland. Sales agents at: Portland, Seattle. Distributors from coast to coast.

105 Years Making Strong the Things That Make America Strong



"No Zippo owner ever spent a cent for repairs"

That, in effect, is the unconditional guarantee which accompanies each of the many millions of lighters produced by the Zippo Manufacturing Company of Bradford, Pa. To make such a policy pay, returns for repairs must be held to a minimum.

How does Zippo do it? First, the design of the lighter is excellent. Second, meticulous care is employed in fabricating, assembly and finishing. And third, let's not overlook the fact that the Anaconda Copper Alloys used for the components illustrated were carefully specified for composition, grain size, form and temper.

Moral: Your product will be worth more if it's made of brass, even if it costs more. And very often the extra metal cost is offset by longer tool life and lower fabricating costs . . . in lower plating and polishing costs . . . in a longer, rustless, usually expense-free service life. We'll be glad to help you find out. Address The American Brass Company, Waterbury 20, Connecticut. In Canada, New Toronto, Ont. B098

POCKET LIGHTER A and J, top and bottom of outside case, deep drawn from brass strip. B, nickel silver hinge and pin. C, solid brass cam rivet. D, tubular brass rivet for flint wheel. E, nickel silver inner shell and chimney. F, nickel silver top plate. G, brass flint follower. H, seamless brass flint tube. I, brass flint tube screw.

TABLE LIGHTER K and P, special shape seamless brass tube for top and bottom outside case. L, brass top plate. M, brass chimney seal plate. N, special shape seamless brass tube, telescopic fit. O, die pressed brass forging. Chimney unit and its components are the same as the pocket lighter. Both lighters are finished in gleaming chromium plate.

ANACONDA

the name to remember in

COPPER, BRASS & BRONZE

NYLON gives this New Abrasive disc-wheel *that all-important Extra*

SAFE

TOUGH

DURABLE

NON-RIGID

ECONOMICAL

SAF-T-CUT

For rugged weld grinding, Saf-T-Cut disc-wheels have no superior.
(Will fit all standard right-angle head grinders and sanders... air or electric driven).

BAY STATE®

● This unique Bay State product, reinforced with strong nylon cord, is being acclaimed the "hottest" development in the abrasive field. There are definite reasons for such valued recognition when it comes to rough, heavy-duty portable jobs that must be done FAST. Ask for a free demonstration. You be the judge.

BAY STATE ABRASIVE PRODUCTS CO., Westboro, Mass.

WEST COAST DISTRIBUTORS

IN OUR MAILBOX

Monumental Job

Editor, Western Industry:

Your able and informative Review and Forecast Number represents a tremendous labor in assembling, analyzing and charting current statistics relating to industry in the West. I am noting it to other officials of this company, knowing of their interest in the views of those studying the problem. Ours is a company whose business in the future will be controlled largely by what happens in that section of the country.

I am increasingly convinced that forecasts on industrial development can be based on population trends. Living standards requiring more goods and services per capita are important and so, to a limited extent, are export outlets; but after all, population is the primary factor . . .

It would seem your population estimates for 1960 are conservative both for the Pacific states and the Western states. The Western states certainly should get 4.2 million out of 15 million national increase in the next 10 years.

JOHN W. HAW, Director,
Agricultural Development,
Northern Pacific Railway Company
St. Paul, Minn.

* * *

Promotes Unity

Editor, Western Industry:

I have examined your annual Review and Forecast Number and find it very interesting. It has been added to my files and I am sure that it will prove valuable as source material.

In my opinion it is an interesting and compact presentation of Western industries. I feel that it is a definite contribution toward the development of a source of unity among the industries in the West. Industry though competitive is necessarily interdependent—geared together, if you will—to produce efficiently goods and services for people at prices which they can afford to pay. Sometimes I feel that the interdependence of industry is not appreciated by those who benefit most from the products of industry.

W. A. DEW, Manager,
Pacific Coast District Extension
Division,
E. I. du Pont de Nemours & Company.

* * *

Inspires an Editorial

Editor, Western Industry:

It has recently been our pleasure to review a copy of *Western Industry*.

As we are located in one of the fastest growing of America's cities and subsequently vitally interested in Western growth and expansion we would be extremely grateful if our name could be added to your mailing list for a copy of *Western Industry*.

Perhaps you would be interested in learning that we will be able to use information from this fine periodical for an editorial in a company magazine just being started, besides making us feel that we are "keeping our fingers" on what is happening in the eleven Western states.

C. E. KUSTER
Terminal Manager
C-Transcon Lines
Los Angeles

Continued on page 27

EDITORIAL COMMENT

Important Guide Posts

WE HAVE much to learn in the West in industrial management and operating methods. This is significantly revealed in the first three installments of a survey of 211 Western plants initiated by *Western Industry*. This issue of the magazine contains the third installment; the first and second appeared in the March and April numbers.

Most important so far is the revelation, in actual statistics, that in the matter of organization those plants whose ideas and methods spring from the West are as a class behind the establishments which are branches or subsidiaries of Eastern factories. Southern California, among the Western areas covered in the survey, seems to be the most advanced.

Evidently we are still too much in the "one-man show" stage, a more or less inevitable accompaniment of industrial adolescence. While this is generally supposed to be particularly true of the smaller plants, nevertheless the survey shows the condition is also far too prevalent in larger establishments.

The difference between organization and the lack of it is well illustrated in the case of two division superintendents employed by one of the railroads in the West. One insists on keeping all the strings in his own hands, and is constantly buried under a pile of work. The other has his division so well organized that he takes life easy, but in the light of results obtained he is turning in a far more efficient performance.

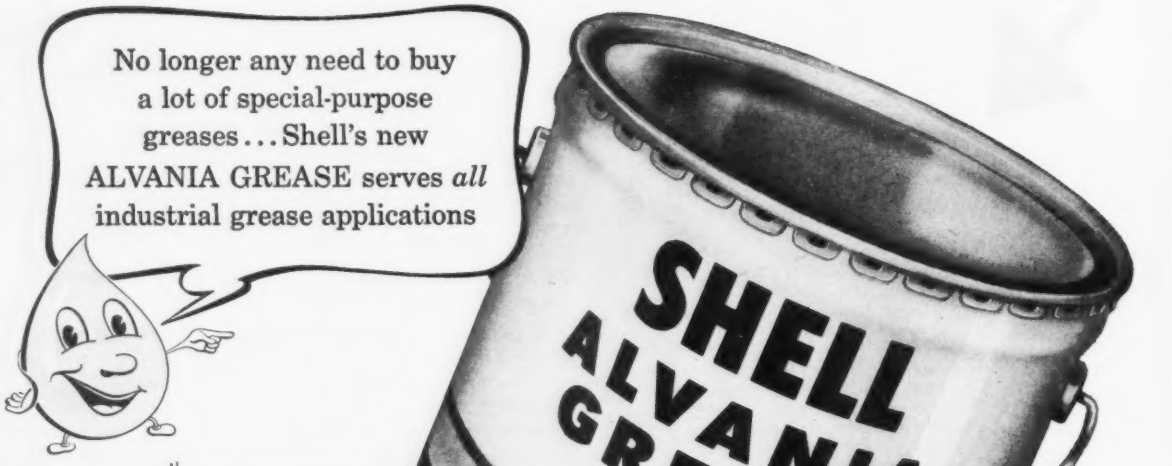
In view of today's appallingly high break-even points, the need for efficient organization is inescapable. It will be even more important for Western plants, because in most cases they cannot develop the volume production possible elsewhere in the country. And the pressure from buyers also becomes heavier. One Western manufacturer, strikingly successful in holding his own against the competition of Eastern organizations, is finding that the big industrial customers who purchase his output are becoming cost-conscious to an extent undreamed of before the war. His only answer lies in the constant scanning of organization and methods, in order to trim out waste and inefficiency.

Our readers will do well to study carefully the information contained in the survey. Already it has become apparent that building a business around the personality of one man is a risky proposition, and the later installments of the survey are likely to reveal many additional points of weakness in Western organizations.

The Fundamental Function

AN UNDERSTANDING by management and other employees that the principal function of management has become one of selling the skills of the people employed by that firm, would go a long ways toward showing both management and labor the desirability of working together for their own best interests, says Alexander Heron, vice-president of Crown-Zellerbach Corporation. Assuming that management's most important function is that of salesman for the workers, then its second function consists in presenting this concept to the employees involved.

Now...cut your grease inventory down to a single lubricant


No longer any need to buy a lot of special-purpose greases... Shell's new ALVANIA GREASE serves *all* industrial grease applications
SHELL
ALVANIA
GREASE
SHELL

Containers range from 10 lb. cans to 400/435 lb. drums

Lubrication equals or surpasses that of special-purpose greases

Reduces grease consumption

Simplifies application —saves labor

Saves you money

SHELL ALVANIA GREASE

FOR COST-CUTTING LUBRICATION

MAIL BOX

Continued from page 25

Confirms an Investment

Editor, Western Industry:

Since 1912 our Company has had a California subsidiary, the John A. Roebling's Sons Company of California. We established this subsidiary and opened branches in all the principal cities of the West Coast on the theory that the West would be an ever growing market for our products.

We have never been disappointed. Our western business has grown with the West. For this reason we naturally were interested in your "Annual Review and Forecast" number. It convinces us once again that our faith in western business is justified and our investment there is a good one.

Besides markets, the West has also given us some very capable men, among whom is our present Vice President In Charge of Sales, Mr. E. C. Low, former President of the California Corporation.

Your "Annual Review and Forecast" does a fine job of serving your readers and your community. We do not know how you could improve it.

CHARLES R. TYSON, President,
John A. Roebling's Sons Company,
Trenton, New Jersey.

* * *

Source of Economic Data

Editor, Western Industry:

We always find the issues of *Western Industry* extremely interesting. As a statistician, I am particularly impressed with the annual Review and Forecast number for January, 1950. This issue contains a great deal of valuable information, and undoubtedly will be used extensively as a reference source of economic data concerning the West.

M. I. GERSHENSON, Chief,
Division of Labor Statistics and
Research, State of California,
San Francisco, California.

* * *

Visualizes Opportunities

Editor, Western Industry:

Your Review and Forecast Number is an excellent resumé of the actuals and potentials of western industry. I am circulating this issue to the vice-presidents in charge of our major product divisions so that they may see the opportunities that lie in the western states.

Our vice-president in charge of research came to us from California and he is continually needling all of us to get a better understanding of western opportunity. Your Review and Forecast Number provides an excellent summary in support of the case which he makes.

J. P. MARGESON, JR.,
Executive Vice-President,
International Minerals & Chemical
Corporation, Chicago, Ill.

* * *

Of Reference Value

Editor, Western Industry:

I think your Review and Forecast Number is without question one of the most complete and comprehensive editions I have seen presenting information of interest to all industries. I assure you that we shall use your publication as a valuable guide and reference.

F. M. HAWLEY
President and General Manager
Morse Chain Company, Detroit.

Here's How To:
• Cut Your Floor Maintenance Costs
• Reduce Slipping Accidents
• Improve Your Products
FOOT SAFETY IN EVERY FOOT
Grip without a slip!
Easy to clean!
Easy to Match!
Install A.W. Super-Diamond Rolled Steel Floor Plate in your plant and you eliminate floor maintenance bills and costly slipping accidents. It requires no maintenance, and the exclusive engineered Super-Diamond Pattern "grips without a slip" keeping men's feet safe and secure. A.W. Super-Diamond improves products too. On machine tool bases, saddle tanks, lift trucks and on heavy construction equipment, both stationary and mobile, it guards against slipping accidents. Architects, product engineers, safety engineers and purchasing agents everywhere specify Super-Diamond for safety.
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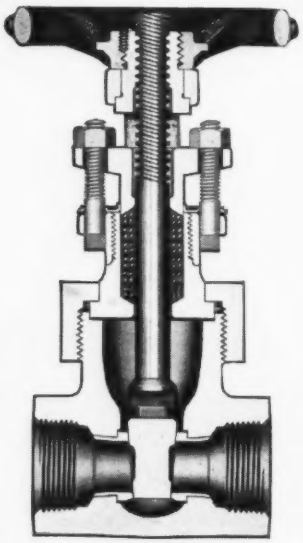
All the piping equipment you need ...on one order to CRANE



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For steam up to 850 deg. F., and for water, gas, or air.
Sizes: ¼ to 2 in.
Screwed or welding ends

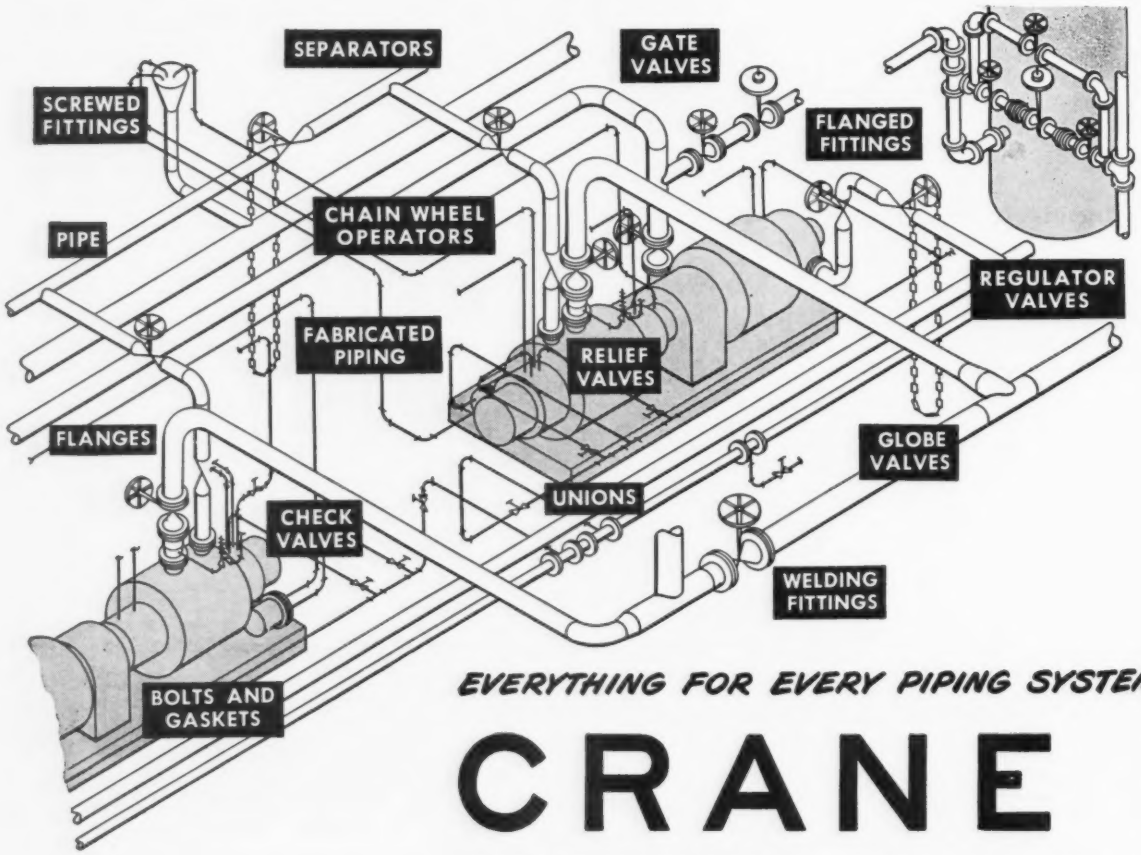
SMALL STEEL VALVES WITH BIG VALVE FEATURES

Crane 600-Pound Small Steel Gates with Union Bonnet—for steam, water, gas, or air—are smaller, lighter, and more compact than usual high pressure design . . . yet are amply strong. Metal sections at all points provide extra strength and safety under rough usage and extreme pressure-temperature conditions.

Body, bonnet and yoke are high quality carbon steel. Seating is Hardened Stainless to Exelloy, offering superior resistance to wear, corrosion, and temperature effects. Husky bonnet ring with long, precision-cut threads pulls up easily . . . always stays tight. Long-lived blowout-proof gasket in bonnet joint is unaffected by highest temperatures or fluids on recommended services. For more information, **write for circular AD-1741.**

CRANE CO., 836 S. Michigan Ave., Chicago 5, Ill.
Branches and Wholesalers Serving All Industrial Areas

THIS POWER PLANT INSTALLATION, FOR EXAMPLE, CAN BE COMPLETELY EQUIPPED BY CRANE



EVERYTHING FOR EVERY PIPING SYSTEM

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VALVES • FITTINGS • PIPE • PLUMBING AND HEATING

CALENDAR OF MEETINGS

May 2-7—Greater Portland Industries Exposition, U. of Portland campus. Contact Fred Kempe, Adv. Assistant, Portland Gen. Elec. Co., 621 S.W. Alder St., Portland 5, Ore.

May 3—Materials Handling Institute, Marines Memorial Club, San Francisco. Panel session of engineers and experts. Contact Roy W. Kelly, School of Management, Golden Gate College, 537 Market St., San Francisco.

May 11-12—American Petroleum Institute, Production Division, at Los Angeles.

May—N. A. M. Oregon Industrial Leadership Conference, at Portland. Contact Jack Shields, BR. 2637, N.A.M., Pacific Building.

May 17—Manufacturers Conference, Hotel Claremont, Berkeley, auspices Oakland Chamber of Commerce. Contact Ken Moeller, Oakland C of C.

May 22-26—Western Conference on Apprenticeship, at Seaside, Oregon. Contact Convention Committee, Chamber of Commerce, Seaside.

June 2-3—Pacific Coast Conference of Controllers Institute of America, at Ambassador Hotel, Los Angeles. General Chairman is Rudolph Ostengaard, Assistant Vice President, California Bank.

June 12-15—Packaging and Materials Handling Institute, University of Southern California Campus. Contact Bruce Long, secretary, Society of Packaging and Materials Handling Engineers, 210 S. Los Angeles St., Los Angeles.

June 15-16—Conference on Industrial Development, Albuquerque, N. M. Contact Ralph Edgel, director, Bureau of Business Research, University of New Mexico, Albuquerque.

June 19-30—Institute of Northwest Resources, sponsored by Oregon State College at Corvallis. Dr. F. R. Zeran is director of the summer session.

June 25-29 — Forest Products Research Society, at Multnomah Hotel, Portland. Contact Edward G. Locke, president, AT. 6171, U. S. Forest & Range Experiment Station, or C. W. Richen, BR. 6481, Housing Chairman.

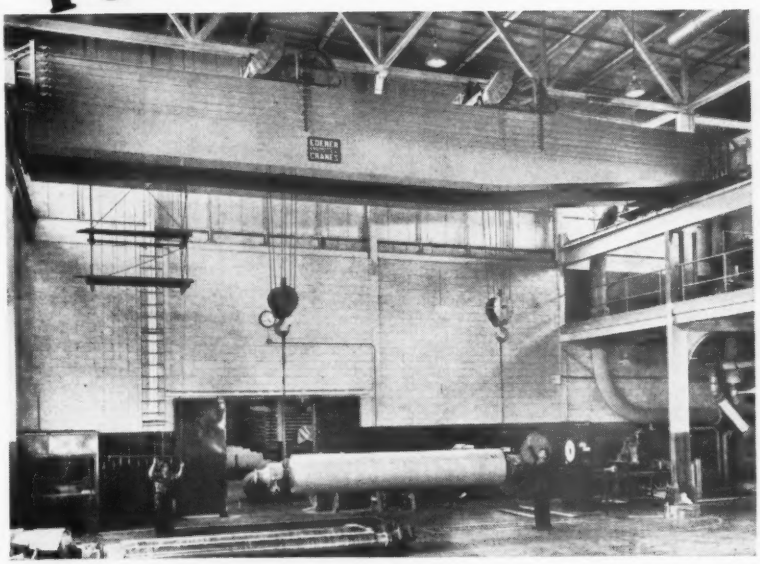
June 29-July 1—National Industrial Advertisers Association national conference, at Hotel Biltmore, Los Angeles.

Aug. 16-18—Western Packaging and Materials Handling Exposition, Civic Auditorium, San Francisco. Contact E. H. Heimer, 769 Monadnock Bldg., San Francisco.

Aug. 19-20—Statewide Air Freight Clinic. Hotel Claremont, Berkeley. Contact Aviation Committee, Oakland Chamber of Commerce.

Sept. 18-19—Western States Council, annual meeting, Reno. Contact Gus P. Backman, president, care Salt Lake City Chamber of Commerce.

BUILDING FOR THE FUTURE*



★ A "HALF CRANE" THAT WILL BE EXTENDED WITH PLANT EXPANSION

This crane, in the paper and new wood preparation plant of the St. Regis Paper Company, Tacoma, Washington, was designed specifically for future expansion of the machine room where it is installed. It's literally a "half crane"—designed and custom-built with a 49'8" span that can be extended to 75'—still retaining its 24-ton capacity.

EDERER has the knowledge and plant facilities to design and engineer equipment similarly custom-built to the exact job requirements of any industry. Why not talk over your job requirements with an EDERER engineer?

All-Electric Overhead Cranes • Grapple Cranes
Monorail Hoists • Hand-Operated Cranes

144C50

EDERER
ENGINEERING COMPANY
2931 FIRST AVE. SO. SEATTLE 4, WASH.

Throughout the 11 Western States...

See How BUTLER STEEL BUILDINGS Help Industry Build Better, Faster, for Less!

Steel warehouse, Spokane, Wash., is typical of Butler Buildings used by Western industry.

. . . and in Your Own Industry See How BUTLER Can Serve You

Fire-safe and weather-tight, permanent Butler Steel Buildings can be adapted to any need . . . save you up to 50% investment. Your local Butler distributor will give you complete sales and erection service. See him soon!

This photo shows roomy interior of Spokane warehouse pictured above.

Made in Richmond, California, BUTLER STEEL BUILDINGS...

...are the proud result of more than 35 years' experience and skilled craftsmanship. (Note efficient layout of machinery and precision equipment used by Butler in its plant at Richmond).

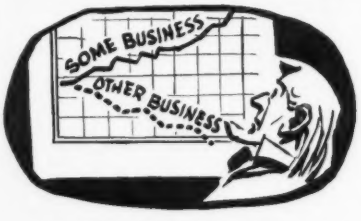
Manufacturing and processing operations like this packing company at Santa Cruz, Calif., are housed in Butler Buildings throughout Western States.

BUTLER MANUFACTURING COMPANY
Richmond, California
Kansas City, Mo. Galesburg, Ill. Minneapolis, Minn.

TEAR OFF AND MAIL THIS COUPON *TODAY!*

Address: Dept. WI25, Richmond, California
Send name of distributor and information about Butler Steel Buildings, to be used for
INDIVIDUAL _____
FIRM _____
STREET _____
CITY _____ **ZONE** ____ **STATE** _____

Building permit upturn continues; Carloadings static; Plywood never had it so good before; Apparel can't get costs into line; Employment is stable and unemployment fades; Hollywood to cash in on television



A GENERALLY firm tone seems to be evident in regard to long range developments for the West, particularly in the line of future industrial expansion. These factors, however, are not reflected in many of the short range indexes, which seem to have a downward trend, although employment continues reasonably stable, while the sharp winter unemployment peaks faded out unexpectedly early in some areas.

The bright spots in the immediate situation are building permits and the demand for lumber and plywood. Also a bright light is starting to shine over the movie industry, which seems to have sold the idea that TV programs can be produced better and cheaper in Hollywood film factories than in Eastern advertising agency headquarters. Incidentally Los Angeles, which ranks second as a TV set market, reports that TV consumption of electricity is so great that every seven sets constitute, in power load, the equivalent of a new home.

Building permits for the three Coast states and Utah, Arizona, Nevada and Idaho for the first two months this year are up 32.9% over a year ago, according to *Daily Pacific Builder*, the February total being $117 million. Greatest percentage increase is 590% in Utah. Western bank deposits also are up over a year ago, but loans have decreased.

Second quarter freight car requirements in Pacific Coast Transportation Advisory Board territory are forecast at 0.95% under actual carloadings a year ago, or 4,027 cars less, but more than three-fourths of this decline represents ore, concentrates and nonferrous metals. Meanwhile interstate truck movements continue to forge ahead of 1949.

Wholesalers sales of consumer goods continue to be below a year ago, and department stores also are experiencing some decline in volume. Shrinkage in sales of furniture and other household items is blamed in some quarters on the inroads of television.

New household and commercial gas connections for the last quarter of 1949 reflect continued population

Continued on page 33

MANUFACTURING EMPLOYMENT

Estimated Number of Employees

Source: U. S. Bureau of Labor Statistics and State Agencies

	Feb. 1949	Feb. 1950
Washington	155.4	153.5
Oregon	104.1	111.0
California	694.0	683.3
TOTAL PACIFIC	953.5	947.8
Montana	15.9	16.9
Idaho	15.1	16.2
Wyoming	5.5	5.8
Colorado	52.5	51.9
New Mexico	9.6	11.0
Arizona	14.8	14.5
Utah	26.0	24.9
Nevada	2.9	2.9
TOTAL MOUNTAIN	142.5	144.1

*Not yet available.

Business Activity Indices

	1949 December	1950 January	1950 February
[1]Arizona	322.4	320.2	331.7
[2]California	221.5	215.7	220.4p
[3]So. California	276.7	275.6	275.8p
[4]Pacific Northwest	216.8p	.....	.....
[4]Puget Sound	210.5	.....	.....
[4]Inland Empire	190.7	.....	.....
[4]Lower Columbia	237.9p	.....	.....

1. Valley National Bank (Phoenix) index, based on a weighted composite of retail sales, agricultural income, and employment in mining, manufacturing and construction, seasonally adjusted. 1940=100.
2. Wells Fargo Bank & Union Trust Co. index based on the following components: Industrial production, freight carloadings, bank debits, department store sales (weighted 4, 3, 2, 1, respectively, and adjusted seasonably).
3. Security-First National Bank of Los Angeles index, based on the following components and weights, and adjusted seasonally: department store sales, 15; building permits, 5; Los Angeles bank debits, 20; residential city bank debits, 5; agricultural city bank debits, 5; industrial employment, 20; industrial power sales, 13; railroad freight volume, 6; telephones in use, 7; real estate activity, 4.
4. Index compiled by Bureau of Business Research, University of Washington. Basis of compilation not indicated.

p. Preliminary estimate.

INDEX OF DEPARTMENT STORE SALES

(Index numbers, 1935-39 daily average = 100 with seasonal adjustment.)

Compiled by Federal Reserve Bank

	Jan. 1949	Jan. 1950	Feb. 1949	Feb. 1950
Total 12th Fed. Res. Dist.	341	316	314	323
Southern California	390	374	347	349
Northern California	312	295	292	295
Portland	314	257	293	310
Western Washington	334	298	315	353
Eastern Washington and northern Idaho	333	278	327	343
Utah and southern Idaho	302	276	283	303
Phoenix	443	423	423	427

BANK DEPOSITS

(In millions of dollars—adjusted)

Average of daily figures. All member banks in the 12th Fed. Res. District. Demand deposits, excluding U. S. Government deposits, cash items in process of collection, and interbank deposits.

	Feb. 1949	Feb. 1950
Net Demand Deposits	8,218	8,869
Time Deposits	6,031	6,257

BANK LOANS

Industrial, commercial and agricultural

(In millions of dollars)

From weekly reporting member banks of Federal Reserve System in 7 Western cities: L.A., S.F., Portland, Seattle, Tacoma, Spokane and Salt Lake.

(Average of Wednesday reports)

March, 1949	2,148
March, 1950	1,967

FREIGHT

Cars of revenue freight, railroad carriers in 11 Western states

Compiled from Assn. of Am. R.R. weekly reports

	Carloadings		Received from Eastern Connections	
	1949	1950	1949	1950
February	414,435	392,666	258,891	226,332

TRUCK TRAFFIC

(Number of commercial trucks entering state through border checking stations)

	CALIFORNIA		ARIZONA	
	1949	1950	1949	1950
February	11,863	15,480	19,003	23,386

INDEX NUMBERS OF WHOLESALE PRICES BY GROUPS OF COMMODITIES AND BY MONTHS

Bureau of Labor Statistics, Washington 25, D. C.

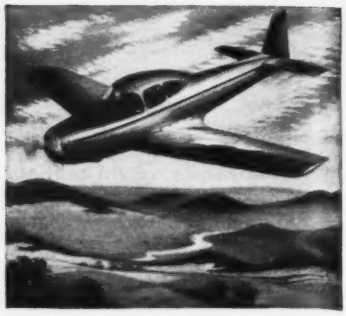
(1926 = 100)

1949	Farm Products	Foods	Hides and Leather Products	Textile Products	Fuel and Lighting	Metals and Metal Products	Building Materials	Chemicals and Allied Products	House Furnishing Goods	Miscellaneous	ALL COMMODITIES
September	163.1	162.0	181.1	139.0	130.6	168.4	189.4	117.7	142.9	109.6	153.7
October	159.6	159.6	181.3	138.1	130.6	167.3	189.2	116.0	143.0	109.0	152.2
November	156.8	158.9	180.8	138.0	130.0	167.3	189.5	116.1	143.4	109.7	151.6
December	155.3	155.7	179.9	138.4	130.8	167.8	190.3	115.3	144.1	110.7	151.3
1950											
January	155.3	154.7	179.3	138.5	131.3	168.4	191.7	115.7	144.8	110.0	151.6
February	159.1	156.9	179.0	138.2	131.2	168.6	192.7	115.3	145.0	110.0	152.7

Refrigerators used to hate children!

The Problem: Children and grownups would bump into refrigerators with their toys and packages and chip refrigerator coatings. Manufacturers got complaints.

The Solution: Industrial Finish Engineers developed a special finish that has extreme flexibility, so that when the refrigerator is banged, the finish bends with the metal. Because of it, manufacturers have all but eliminated customer complaints about the finish on their refrigerators.



Problem: At high airplane speeds, the atmospheric dust used to ruin the finish on airplanes.

Solution: Industrial Finish Engineers developed a finish of agate hardness, smooth enough to eliminate shock waves at high speeds—durable enough to withstand blasts of dust.

Problem: To find a finish for lipstick containers that would not be damaged every time milady took the top off.

Solution: Industrial Finish Engineers worked up a special finish that withstands constant friction, and perspiration. Containers keep their new look longer.

Problem: To find a way to keep the finish on door handles and other door hardware from wearing off.

Solution: Industrial Finish Engineers developed a finish that resists abrasion and perspiration from hands—isn't damaged by weather.

Let Industrial Finish Engineering help reduce your customer complaints!

Here are a few of the ways Industrial Finish Engineering can improve a product.

Other manufacturers report cuts in operating expenses, more sales appeal—thanks to Industrial Finish Engineering.

Learn what it can do for your product. Consult an Industrial Finish Engineer today.

For the Finish Industry has technical ability to make finishes equal to the purpose for which each product is bought. Remember, most of your customers *start buying with the finish in mind.*

The better the finish—The better the buy!

© 1950. National Paint, Varnish and Lacquer Association, Inc., Washington, D. C.

Continued from page 31

growth in California, but Maurice Gershenson, who directs the gathering of employment statistics for the state, is inclined to believe that currently-used estimates of 15,000 per month immigration may be exaggerated. Conrad Jamison, research director for Security-First National Bank, estimates current immigration for Los Angeles County at 4,000 a month.

The present overproduction of petroleum and its products in California is entirely normal and desirable, according to President Robert Minckler of General Petroleum Corporation. He believes use of stove and diesel oil in the West will increase 4% to 5% a year, unless a gas line is laid into the Northwest and that gasoline use will increase 3% to 4% a year. The future of heavy oil, he says, lies not in its use as a burning fuel, but as a raw material for gasoline and distillates, consequently the problem is one of refining, rather than marketing.

Electric Energy

The supply picture for the West this year is generally good. In the Pacific Northwest stream run-off is normal and in late March steam was being used for peaking only. Three big hydro units at Grand Coulee of 108,000 kw. each are coming into operation. The fourth unit on the right bank at Coulee came in last month. No. 5 is due in July and No. 6 in October. Idaho Power Company has brought in 23,000 kw. at its Bliss plant, completing the present stage of its development program; nothing more is scheduled for completion until 1953 and 1954.

In California snow pack is good and storage reservoirs in good shape. Pacific Gas & Electric brought in 57,000 kw. at its Rock Creek plant in March, following completion of its Bakersfield steam plant in February, and 100,000 more kw. are due from the Moss Landing steam plant this spring. For the first season in a long time Arizona seems likely to get through without serious curtailment of use.

ELECTRIC ENERGY

(Production for Public Use—in thousands of kilowatt hours.)

(Source: Federal Power Commission)

	Jan. 1949	Jan. 1950
Mountain	1,298,568	1,434,430
Pacific Northwest	1,803,260	2,047,189
California	1,822,304	1,821,066
TOTAL PACIFIC	3,625,564	3,868,255

Gas

Natural gas for Washington and other parts of the Pacific Northwest met another setback when opposition to bills pertaining to the construction of pipe lines via the American route met opposition in the Canadian house of commons in Ottowa recently.

There is strong feeling in British Columbia to have the pipe lines from the rich Alberta fields routed all-Canada to the Coast, and thus serve British Columbia first, which would constitute the main Canadian market. Branch lines from British Columbia would then be run to Seattle and other consumption centers in the United States.

American promoters of Alberta gas, who point to the much larger market for the gas south of the international boundary, point to the less expensive route if the lines come south into American territory first and then go north from Seattle into British Columbia. However, the gas is of Canadian origin, a fact which gives rise to a considerable element of politics.

California's declining supply of gas from its own fields is indicated in an American Gas Association report that withdrawals in 1949 were about 40% higher than accruals and that the reserves are now below 10 trillion cubic feet, a net decline last year of about 210 billion cubic feet. California is still fifth state in amount of gas reserves.

The rising curve of natural gas sales in the Pacific states leveled off in the fourth quarter of 1949, with only a 0.9% gain from the corresponding period in 1948. Revenues were off 6.3%, but although industrial revenue was off 24.7% due to the depressed price of crude oil, sales were up 8.9%. The number of residential customers was 132,774 greater than a year ago, a factor which may serve as an indication of the increase in Pacific Coast population. In the mountain states, natural gas sales gained 4.4%, revenues 4.4% and the number of residential customers 12.3%.

Manufactured gas in the Pacific states had an unfavorable picture, with the total number of customers down 3.6%, sales 9.2% and revenues 16.8%.

NATURAL GAS

CALIFORNIA

(Compiled by Roy M. Bauer, gas supply supervisor, Southern California Gas Company)

UTILIZATION

(in thousands of cubic feet)

Number of Consumers		1948	1949
Domestic and Commercial	Oct.	2,482,694	2,642,890
	Nov.	2,505,355	2,672,716
	Dec.	2,535,938	2,695,805
Industrial	Oct.	5,672	5,956
	Nov.	5,680	5,971
	Dec.	5,662	5,943
Domestic and Comm. Sales	Oct.	2,482,694	12,495,102
	Nov.	2,505,355	18,158,949
	Dec.	2,535,938	26,184,797
Industrial Sales	Oct.	15,550,133	13,849,018
	Nov.	13,700,951	13,450,382
	Dec.	9,904,320	10,469,129
Electric Generation	Oct.	8,216,614	8,820,768
	Nov.	4,966,661	7,402,960
	Dec.	3,704,378	2,681,872
Net Receipts from Producers	Oct.	42,073,625	42,157,734
	Nov.	42,533,286	41,606,147
	Dec.	49,235,288	50,220,158

Oil

Surplus of heavy oils on the West coast still hangs over the market. To the worries of industry leaders in California, which has no conservation or pro-rate law, is added the shadow of potential invasion by Canadian and Mexican oil when those countries get ready to export in quantity.

Already Alberta has boomed to the point where it is seeking new outlets. Mexican production is climbing very slowly, but known reserves have grown substantially during the past four years and await only exploitation.

Some inroads in the West's big stocks will be made by the Navy, which will buy half its next fiscal year's requirements on the Pacific Coast. The western purchases will consist of about 12,500,000 barrels of oils and 34,000 barrels of gasoline.

Another 2,040,000 barrels of crude oil will be shipped to Japan by Union Oil and General Petroleum during April, May and June under a new government contract.

Standard of California has announced an expensive program of plant modification to convert crude into less heavy fuel oil and more gasoline. Its Richmond thermofor catalytic cracking unit will be adapted to a new houdriflow process which will increase its coke-burning process from 150 to 500 tons an hour.

Shell plans to spend $1,500,000 a month in 1950 on research, principally on development of new agricultural chemicals from petroleum. Major portion of the budget will go to the four principal Shell research centers at Wood River, Illinois; Houston, Texas; Emeryville and Modesto, California; the latter being the site of a 142-acre test farm and laboratory for testing soil fertilization, pest and weed control, and soil fumigation, involving many petroleum-derived chemicals.

PETROLEUM

(California, Oregon, Washington, Arizona, Nevada)

(From Bureau of Mines)

(In Thousands of Barrels Daily)

	Jan. 1949	Jan. 1950
Crude Production	941	867
Gasoline	365	357
Gas, Oil and Diesel	170	138
Heavy Fuel Oil	417	347
ALL PRODUCTS	1,016	945
Wells drilled to March 25	681	397

Steel

Although the big increase in population on the Pacific Coast has caused tremendous developments in residential and school building, and in construction of the accompanying gas, water and sewage pipelines, to say nothing of highways and other public works, office building and hotel construction has lagged far behind. If activity in these lines could be stimulated, steel mills would not feel so badly over the excess bar and structural capacity now existing on the Coast. With three mills each in the Northwest and Southern California, and four in Central California, capable of producing bars and light structurals, capacity is far beyond present needs.

Continued on page 35

4 New HYSTER machines for HORIZONTAL MATERIALS HANDLING

- ✓ **FULLY AUTOMATIC CLUTCH AND TRANSMISSION. No gear shifting. No levers.**
- ✓ **THROTTLE RING — press it and the truck moves. The further you depress it the faster the truck goes. No gear shifting.**
- ✓ **TRUCK TURNS IN ITS OWN LENGTH. Entire Turret power unit can be completely rotated in either direction.**
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- ✓ **COSTS LESS TO BUY THAN MOST POWER-DRIVEN "WALKER CONTROLLED" HAND PALLET OR PLATFORM TRANSPORTING TRUCKS.**
- ✓ **AVAILABLE IN VARIOUS SIZES.**

HYSTER *Salsbury* TUG

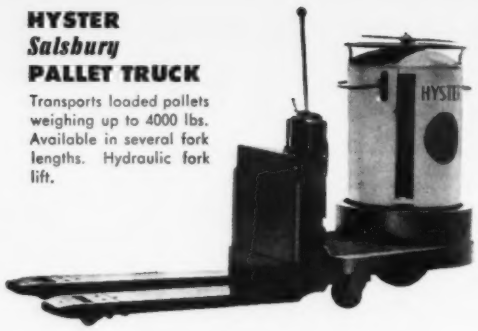
Tows trailer trains up to 15,000 lbs. Most maneuverable towing unit on the market.

HYSTER *Salsbury* CARGO TRUCK

Capacity 4000 lbs. Low platform makes bulky or heavy cargo handling easy.

HYSTER *Salsbury* PALLET TRUCK

Transports loaded pallets weighing up to 4000 lbs. Available in several fork lengths. Hydraulic fork lift.



HYSTER *Salsbury* PLATFORM TRUCK

Handles loads of 4000 pounds on skids or tote boxes. Available in several lengths and widths. Hydraulic platform lift.

HYSTER *Salsbury* Turret Trucks

FOR HORIZONTAL MATERIALS HANDLING

HYSTER *Salsbury* Turret Trucks are LOW COST HORIZONTAL TRANSPORTERS for any type of load up to 4000 pounds. They do the same jobs faster, safer, more economically than man-pulled or power-driven hand pallet or platform trucks of the "walker controlled" type. They team up ideally with all other materials handling systems or machines.

Hundreds of Turret Trucks are in use. They are low in first cost, low in operating cost, high in job performance, are extremely simple to operate.

HYSTER *Salsbury* Turret Trucks are sold—and more important — serviced by Hyster dealers all over the world. Ask for a demonstration. Or mail the coupon for a copy of the Turret Truck catalog, just off the press.

HYSTER CO., 2902-90 N. E. Clackamas Street, Portland 8, Oregon
Please AIR MAIL copy of the new HYSTER *Salsbury* Turret Truck catalog.

FIRM NAME _____

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HYSTER

Manufacturer of a complete line . . . HYSTER fork-type Lift Trucks, Straddle Trucks and Karry Kranes, 2,000 lb. to 30,000 lb. capacity. . . . HYSTER Salsbury Turret Trucks, 4,000 lb. capacity.

Continued from page 33

As for hotels, San Francisco's Sir Francis Drake, built in 1933, calls itself the "newest" hotel in the city, Oakland has less hotel accommodations than before the war, with the Hotel Oakland now a government establishment, and the other cities on the Coast have nothing recent to their credit. The office building situation is much the same, and hundreds of tenants in the about-to-be-torn down Flood Building in San Francisco are unable to find suitable space elsewhere. At the same time, fabricators are taking jobs at prices below those of two and three years ago. Insurance companies seeking investment opportunities please note.

The sheet supply on the Coast continues to reflect the residential construction picture, the tightness being due to the demand for space and water heaters, stoves, roofing, plumbers' pipe and small fabricated items. In fact, sheets are almost on an allocation basis.

Aluminum

Business seems to be good all through the aluminum field, with the exception of utensils. Siding for houses seems to be catching on this year, the grain bin program of the government is accounting for much tonnage and aircraft demand holds up. The call for aluminum results partly from users letting their inventories dwindle, just as they did in 1947.

Aircraft

Addition of 3,000 employees to the 5,700 now working at Consolidated-Vultee's San Diego plant will start this spring. They will modify older-model B-36's by installing four jet units in addition to their six 3500-hp. piston engines. New ones coming off Convair's Fort Worth assembly lines have both. It will take about a year to modify the 50 bombers scheduled for the work.

Convair also is advertising in Los Angeles for field and service mechanics for its Fort Worth operations. Recent orders for 75 more B-36's indicate that the Texas plant thus should be busy for several years. Out of a $207,000,000 Convair backlog, less than $1,000,000 is for commercial planes, the rest being military business.

A presumably well-founded rumor now hints that the Air Force may drop its B-52 Boeing jet bomber as successor to the B-36, depending on success of efforts to "soup up" the latter.

Convair emerged decisively from the red in 1949, for the first time since '45. Six other major airframe companies generally are showing slightly smaller profits but appear optimistic. Douglas' backlog is up about 15%, although spare parts sales dropped sharply through termination of the Berlin air lift and increase in number of other types of planes being flown by airlines. Douglas looks hopefully to its DC-6 because the turbo-prop power plant can be installed with only minor structural changes, making the craft a good transition model pending the industry's much-discussed development (possibly with government aid) of a new pure jet turbine transport.

Northrop's profits for the past year are down sharply because of cutbacks and potential losses in completing the contract for C-125 Raider transports. Lockheed made a little less money but increased its backlog about 15%. It now has about 48% of the orders on file for commercial planes by American airframe makers, plus 8% and 11% of the total Air Force and Navy backlogs. Nine-tenths of its 1949 production of 505 ships were jet-powered.

Western plants have just received sizable orders as follows:

Douglas—70 Skynight (F3D) twin-jet all-weather fighters and 53 Skyraider (AD) propeller attack bombers.

Lockheed—45 Neptune (P2V) patrol bombers and 10 Shooting Star (TO-3) jet fighter-trainers.

North American—15 additional AJ attack bombers, atom bomb carriers powered with one jet and two piston engines.

A "leak" from Capitol Hill disclosed the unsuspected fact that the Air Force wants $1,000,000 to repair, overhaul and store rocket engines. The public previously did not actually know any air force was flying rocket ships. AAF wants, the story went on, to put at least "529 air defense aircraft and striking force aircraft" into the air, equipped with rocket power.

The disclosure, together with a growing epidemic of flying saucer stories and theories to explain them, indicates why major plane makers are sitting tight and not saying much right now about military business. They're too busy, and they feel they have a part in big changes to come.

Canning and Packing

California canners moved 23,766,298 cases of fruits into consumption from June 1 last to March 1 of this year, and still had on hand at the latter date 15,245,979 cases, but the tempo of shipments had stepped up sharply in February and March, so the industry looks toward the coming season far more optimistically than it did a few months back. Two million more cases of peaches have been moved this season than a year ago, although it took drastic price cuts around Christmas time to get the flow going.

Canners are reported paying $20 a ton for tomatoes, $2.50 less than last year. The California Asparagus Advisory Board, a joint body of canners and growers, has engaged Magnuson Engineers of San Jose as engineering consultants to survey harvesting methods. One idea being investigated is mowing the fields instead of the present selective practice of cutting only the spears fully developed, which may entail different processing methods.

Quick-freezers in California packed 186,408,368 pounds of fruits and vegetables in 1949, the largest output since 1946 and 30% up from 1948. Sharp gains in volume of four vegetables is reported: broccoli increasing from 18 million pounds to 28 million, Brussels sprouts from 10 million to nearly 23 million, spinach from 7.6 million pounds to 19.9 million, and cauliflower from 8.8 million pounds to 13.4 million. Fordhook limas constitute the largest item of all, 35.4 million pounds, down 3.6 million from 1948.

Canned olive packers expect their inventory to be gone before new pack time.

IRON AND STEEL

WESTERN AREA OF THE UNITED STATES

From American Iron and Steel Institute (in net tons)

	Feb. 1949		Feb. 1950	
	Output	Per Cent of Capacity	Output	Per Cent of Capacity
Pigiron Output	209,082	93.6	150,957	59.2
Steel Output	402,533	99.7	366,288	83.8
Alloy Steel Output	5,945	.....	8,476	.....
Carbon Ingots, Hot Topped*	13,769	.....	5,420	.....

*Included in total steel.

WHEAT FLOUR

In thousands of sacks

(From Bureau of the Census)

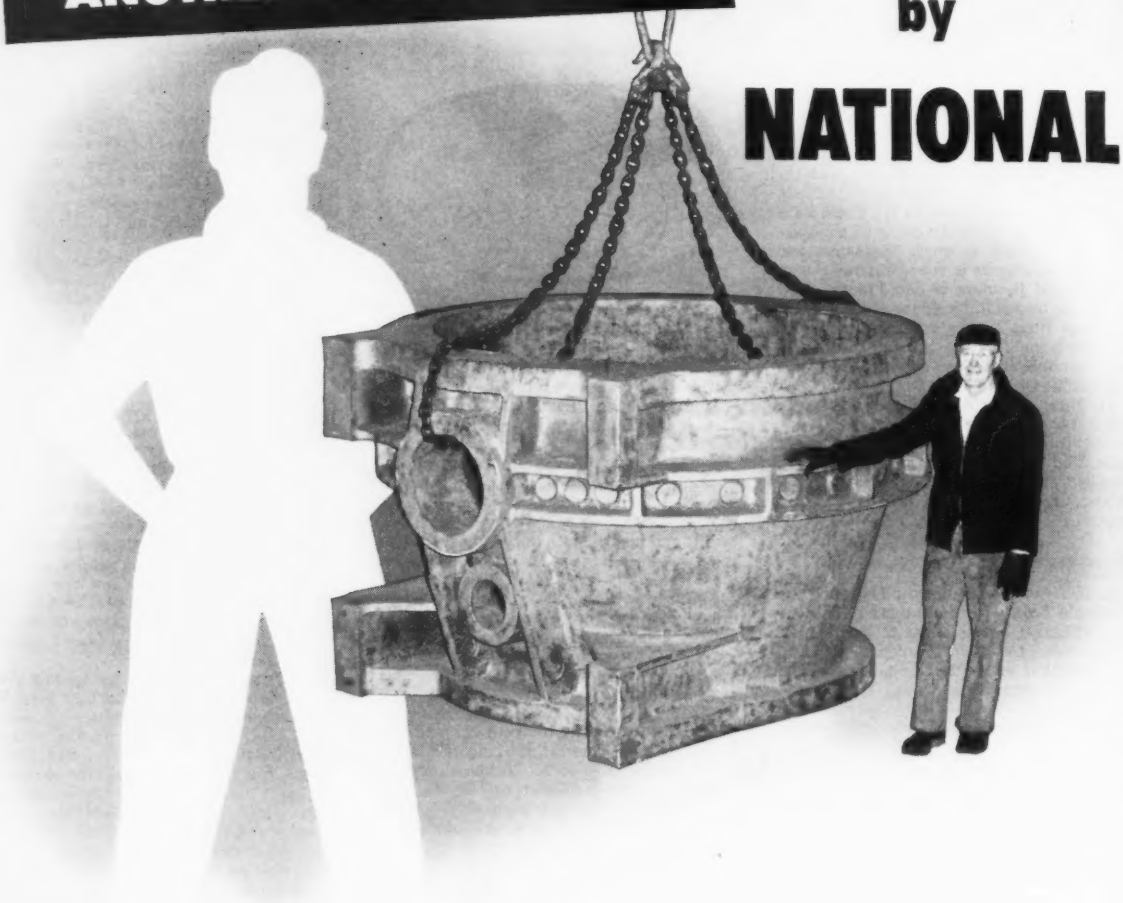
	Jan. 1949	Jan. 1950
Oregon-Washington	1,539	1,117
Montana	269	287
Utah	313	350
Colorado	439	248
California	375	401
TOTAL	2,935	2,403

AIR FREIGHT

(In pounds. Figures from airports)

	Los Angeles		San Francisco		Oakland		Portland		Seattle	
1949	In	Out	In	Out	In	Out	In	Out	In	Out
August	1,292,300	1,260,319	1,608,977	937,110	111,884	241,723	.....	.....	437,172	889,494
September	1,435,127	1,343,327	958,438	1,383,804	97,912	249,726	.....	.....	446,615	932,605
October	1,466,002	1,526,568	1,137,901	1,269,481	116,344	171,614	.....	.....	463,149	885,980
November	1,300,850	1,391,597	967,135	1,075,337	102,351	150,148	.....	.....	.....	.....
December	1,511,280	1,495,057	.....	.....	126,828	155,506	.....	.....	483,843	792,960
1950										
January	1,139,500	1,064,212	855,863	929,761	210,615	158,460	.....	.....	392,850	621,221
February	.....	.....	814,706	1,179,674	107,182	158,467	.....	.....	.....	.....

ANOTHER MAN SIZE JOB by NATIONAL



They wanted a 23,000 pound casting—and we gave it to them in record time. Smooth, efficient handling of each operation at National's Torrance Plant saves time.

Our plant has the facilities to take on your heavy manufacturing jobs. From the electric melting furnace to the machining and finishing operations... it's all done in one integrated plant, the largest in the West.

Call us the next time you have a heavy manufacturing problem. In the meantime write for our free booklet, "From Melting Furnace to Finished Product".

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Apparel

Western apparel makers are trying to get back down to a bedrock cost basis in an effort to compete more successfully with the East. A labor controversy has dragged along for several months in Los Angeles' coat and suit industry.

Manufacturers proposed a 25% wage cut, claiming some such reduction was necessary to meet competition elsewhere. After lengthy negotiations and some factional divisions in union ranks, they then disbanded their 35-year-old Coat and Suit Manufacturers Association, leaving its 120 members to work out contracts individually instead of on an industry-wide basis. The International Ladies Garment Workers Union countered with an offer to accept temporarily a 10% wage cut on condition that employers guarantee a stated amount of employment. At press time the industry was still deadlocked.

Meanwhile garment executives told Governor Warren of California that high freight rates are ruining business, that it is two-thirds cheaper to ship goods from New York to London, thence to San Francisco by water, than from New York to San Francisco by rail. They said rates for garments and garment materials were four times those charged on vegetable shipments, for instance, although the latter have to be iced three times en route. They asked state help in getting shipping rates reduced.

California's apparel and textile industry lags behind the rest of the nation, according to Fred Pruter, San Francisco association head. He said the state markets about 53% of its products in the East, but should be able to employ three times as many people as now if the West gets its proportional share of the business. The garment and textile industry has the largest nationwide payroll of any, including even the auto and steel industries—but in California, it ranks only 13th.

Television is booming one branch of a western specialty—Hollywood trademarked apparel which is "tied in" with TV and movie characters such as Roy Rogers, cowboy heroes. A company newly formed to sponsor merchandise carrying the western star's signature already has 65 licenses for products ranging from toys to furniture but bearing down heavily on boys' wear.

Furniture

Western manufacturers are jogging along at a steady pace, after a successful market period in January in which the trade appeared to buy in good volume.

Wood furniture factories are running pretty sizable cuttings on the assumption that there will be sustained retail demand, with construction of new housing recently hitting all-time highs. Dining room and bedroom furniture of good quality is meeting strong demand, but only when it is priced reasonably.

The longer-range picture is not so bright because of (1) growing unemployment on the West Coast, (2) fast-rising mortality among retailers, and (3) greatly augmented competition for the consumer's dollar.

First-of-the-year stock-taking revealed serious weakness in the financial position of many retailers. Failures have zoomed. Repossessions have stepped up. Store men who

operated on a slender shoestring now find their contingent liability on uncollected installment accounts is suddenly causing finance companies to demand replacement of outstanding paper that has "gone sour." Worst hit are the new and smaller stores whose resources are relatively limited.

Although sales are holding up well enough, the business is going more and more to the strongly established operators and a drastic "weeding out" is taking place. Credit men say it already is at least as violent a readjustment as that which occurred in 1948 and the outlook is for a further squeeze.

TV sales are siphoning off much money that otherwise would go into furniture. The bulge in new home construction is not helping business as much as it should, for buyers need all their cash for down payments and are postponing furnishing their homes until later.

Lumber

Operations are opening up to full scale again after one of the toughest winters in many years experienced in the Pacific Northwest. A big construction program over the country, plus resumption of building in many parts of the country, has much to do with creating a firm market with plentiful orders and rather firm prices. Long winter shutdown of logging is holding log prices up. Labor situation is fairly good.

WESTERN PINE ASSOCIATION

(Comparative report, 106 identical mills, in thousands of board feet)

	Week Ending March 25	Three Year Weekly Average For March	Total to Date 1950	1949
Orders	76,061	71,010	874,544	667,404
Shipments	70,685	62,945	846,001	615,762
Production	61,837	54,988	635,932	504,842

WEST COAST LUMBERMEN'S ASSOCIATION

	February 1950 Aver. Per Wk.	1950 8 Weeks M Feet	1949 8 Weeks M Feet
Production	161,421	1,223,454	1,281,134
% 1945-1949 Yrs.	99.0%	93.8%	98.2%
Orders	201,507	1,731,696	1,465,214
Shipments	189,361	1,399,139	1,277,001

CALIFORNIA REDWOOD ASSOCIATION

	February 1950 All Species	February 1949 All Species
Production	48,019	40,318
Shipments	42,018	29,039
Orders Received	47,437	28,618

SOFT PLYWOOD

From Bureau of the Census

PRODUCTION

(in thousands of square feet)

	1949	1950
January	118,284	168,257

Plywood

Plywood manufacturers have seldom "had it so good" in peace years. Order files are very satisfactorily full and prices are firmly on a profitable level and tending upward rather than otherwise. Jobbers, who last year carried hardly enough stock to warrant being called jobbers, are buying more heavily. Big construction programs, both in heavy and residential fields, will require heavy footage. Logs are not overly plentiful as stocks were in many cases liquidated to sawmills in a mild panic last year and severe winter kept new supplies from coming in.

Pulp and Paper

Position is still strong. Operations are at good capacity. Devaluation of exchange in other important pulp-producing countries has had no important effect on market and is not being used as a lever to depress prices. Pollution problem is giving some trouble and will no doubt eventually result in some plant modifications under public pressure. Some important new capacity will be added to Northwest within next two years.

PULPWOOD

(Pacific Northwest)

(Cords of 128 cu. ft., roughwood basis. Source: Bureau of Census)

	Jan. 1949	Jan. 1950
Receipts	199,406	111,256
Consumption	278,747	291,342

Sugar

Attractive sugar beet prices and less desirable prices for other crops have resulted in California's intended plantings of beets for this year to be 219,000 acres, as against 150,000 acres in 1949. Big beet crops elsewhere in the country were in sight, but the enthusiasm of growers was abating somewhat in March and April because of the declining price of refined sugar. Growers sell their beets on a participating basis, so that they benefit by advancing prices and lose when prices fall. California's plantings took place from January to March; plantings are later in other states. Department of Agriculture figures on intended plantings for 1950, as against actual acreage in 1949, are as follows:

	1950	1949
California	219,000	150,000
Nebraska	54,000	40,000
Montana	72,000	65,000
Idaho	90,000	67,000
Wyoming	35,000	30,000
Colorado	151,000	126,000
Utah	35,000	29,000

ETHYL ALCOHOL

(From Bureau of Internal Revenue)

Production *(in proof gallons)*

DOMESTIC UNDENATURED ALCOHOL

	Feb. 1949	Feb. 1950
California	219,204	403,484
Colorado	.....	.....
Washington	401,952	329,784

DENATURED ALCOHOL

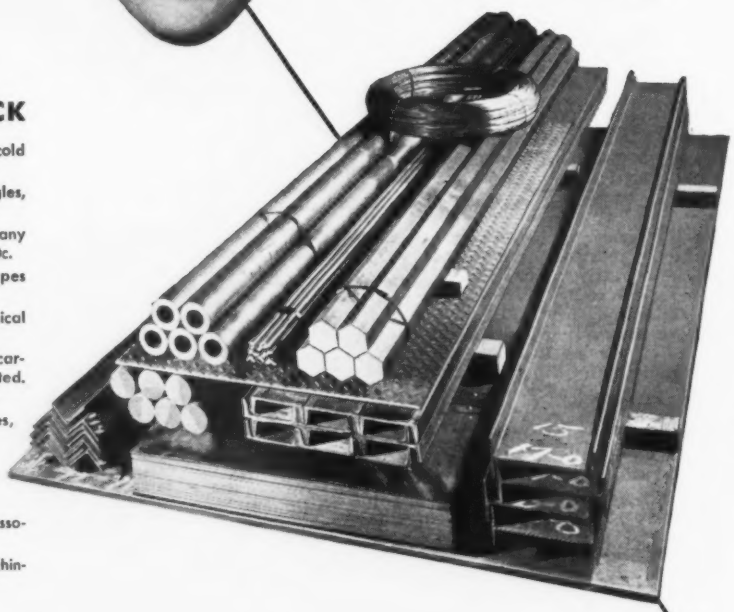
	Feb. 1949	Feb. 1950
California (Completely Denatured)	19,740	6,053

SPECIALLY DENATURED

	Feb. 1949	Feb. 1950
California	178,780	195,088
Utah	.....	.....
Washington	8,203	16,380

Call us for steel

We ship quickly!



EVERY KIND IN STOCK

BARS, CARBON STEEL—Hot rolled and cold finished, rounds, squares, hex's, etc.

STRUCTURAL SHAPES—Channels, angles, I and H beams, etc.

PLATES—Sheared, U. M. and mill edge, many types incl. abrasion resisting, E-Z-Cut, etc.

SHEETS—Hot and cold rolled, many types and coatings, cut to exact sizes.

TUBING—Seamless and welded mechanical and boiler tubes

ALLOY STEEL—Low, medium and high carbon alloys, as-rolled, annealed, heat treated. Also tool steel, oil and water hardening.

STAINLESS STEEL—Allegheny bars, plates, sheets, tubing, pipe and fittings, etc.

INLAND 4-WAY SAFETY PLATE—For flooring, ramps, stair treads, product applications, etc.

REINFORCING STEEL—Bars and accessories, spirals, wire mesh, etc.

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SAN FRANCISCO PLANT: Box 188, Emeryville. Plant: 65th & Hollis Sts. Phones: OLympic 3-2933, ENterprise 10176.

Ship Your Goods by Unit Loads Faster, Cheaper, Safer

By ROBERT H. TARR
Training Specialist, U. S. Naval School, Cargo Handling, Naval Supply Center, Oakland, California

ARE YOU getting a full dollar's worth for each dollar spent on materials handling?

Industries in which this subject is considered incidentally, if at all, often may effect substantial savings by comparing their materials handling policy with that of others; for, like character, everybody has one—whether it is good or bad. Half an answer may be dangerous.

The biggest materials handling job in history was carried out in the recent war by the military services of the U. S. Government. Although diminished in peacetime, military materials handling is a continuing operation, and supplies one of the best proving grounds for trying out answers to this question.

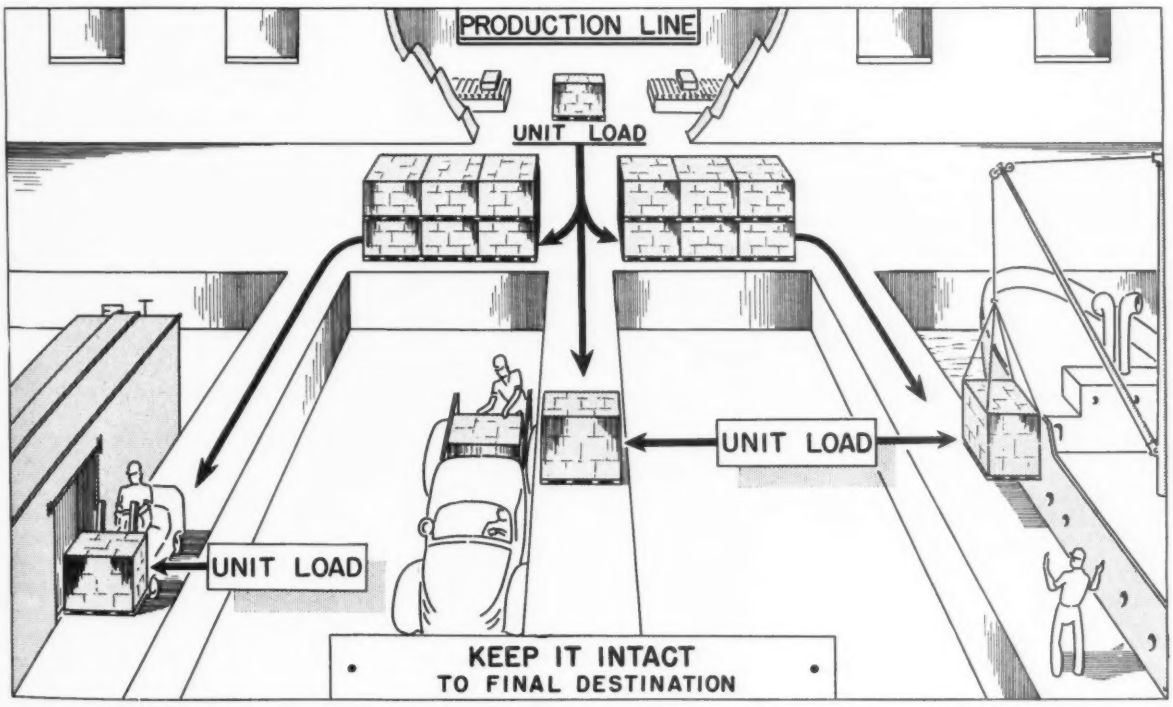
The lessons learned by the operators of this vast company, in which we all are stockholders, are available to private enterprise. The National Security Industrial Association is one organization dedicated to helpful exchanges of industrial information between commercial and military activities. The National Defense Transportation Association is another clearing house for information.

An example of the operation of this principle is the current Bay Area Materials Handling Institute, sponsored by Golden Gate College and participated in by the NSIA, the Army's San Francisco Port of Embarkation, the U. S. Naval School, Cargo Handling, Naval Supply Center, Oakland, and firms representing a large segment of West Coast industry.

The Armed Forces try to get the taxpayer his money's worth in materials handling and transportation. In this article are some of the lines along which the Navy has been working to "move it from here to there," in less time, with less damage, at lower cost. Perhaps some of the Navy's materials handling and transportation ideas and practices can help you in your business.

By application of this research, the Navy saves the cost of its materials handling research many times over. Many specific materials handling studies are currently being pursued at the U. S. Naval Supply Research and

• Unit loads, formed at end of production line, should be kept intact from plant through warehouse and carrier to destination.



Development Facility, Naval Supply Depot, Bayonne, N. J.

These include studies of fork truck stability, a mobile packaging "production line," drum carriers, non-skid fork truck tires, a variety of glued Unit Loads, Unit cargo shipping containers, a motorized hand truck with removable body, mechanized loading of refrigerator cars, sequence of ship stowage of palletized cargo. Add to these the many studies by Navy field activities if you wish to fully appreciate the scope of Navy materials handling development.

Objective evaluation of your materials handling policy is possible without professional help from outside your own organization, simply by examining it from the following three points of view:

1. The concept of the Unit Load.
2. Handling of the Unit Load.
3. Traffic management of Unit Load shipments.

The "Unit Load" is simply "making big ones out of little ones." (It is to be hoped abstracting this simple idea will not inspire parallels with the common, informal definition of economics as "common sense, made difficult"). Proper consolidation of your material will reduce handling costs; the useful limit of such consolidation is never reached, seldom approached. The more pieces that may be handled as one, generally speaking, the greater the savings that may be expected.

Ask yourself constantly this question: *"Can more of this material be handled at one time, as one piece?"* If it can, pilferage, damage and delay will be reduced, less floor space will be required in storage, and equipment will be tied up for shorter periods.

A great variety of materials—canned goods, cased goods, sacked goods, tires, drums, household effects, and dozens more—lend themselves readily to Unit Loading. The chances are that equipment is now on the market to handle more pieces of your material as a single unit than you thought possible. Further, equipment manufacturers continually invent and produce new means to implement the concept of the Unit Load. Ask them the same question—it may save you money.

Then do you need handles, slots, blocks on bottoms, nesting arrangements, to expedite handling? What is your package's best pallet pattern for the common 48″ x 48″ pallet; for the waterfront's usual 48″ x 60″ pallet; for the Navy standard 40″ x 48″ pallet—how many per layer, how many layers high?

ROBERT H. TARR

One of the most important aspects of packaging your material is the relationship of the individual package to a larger Unit Load. To paraphrase Jefferson's truism of government, the *least* packaging, consistent with protection, is the *best* packaging.

The pallet in many respects is just another package, with a double bottom and no sides. Sometimes you need a top: for instance when the material is too uneven or too soft to support another pallet load on itself. The answer in a particular operation may be "picture-frame" pallets, or if the locations between movements are always the same, perhaps pallet racks.

• Here is what can happen to a pallet load of goods that is not securely held, by a restraining force. This could have been held together by (1) metal strapping, (2) adhesive treatment of individual cases, or (3) tight stowage on pallet.

In other situations the pallet is a luxury, and handling activities can better afford to remove this double bottom before shipment, and apply it again upon receipt for further local handling, than to pay the cost of building and shipping the pallet. An excellent example of unreasoning attempts to handle material by the letter of the Unit Load concept—slavish adherence to palletization, rather than its spirit, is the case of the $47.49 shipment from California to Little Rock, Arkansas:

Lading:	180 pounds	
Rating:	Double 1st class, LCL	
Charge:		$30.53
Pallet:	100 pounds	
Rating:	Double 1st class, as container	
Charge:		16.96
Total shipping cost:		$47.49

The pallet was not returned, for an out-of pocket cost of about $5.00 more.

Moral: A labor saving device is only as good as the people who use it.

Any business with large volume of recurring shipments of homogenous materials can easily prepare a rough graph or chart, showing even the newest shipping clerk in which cases to leave pallets with the loads, and at which distances and size loads to start leaving pallets off. A very great amount of the effectiveness of materials handling methods lies in carefully planned administration.

Packaged lumber shipments on this coast are improving service and lowering cost of shipping lumber. This is being done through converted landing craft service to pioneer this application of the unit loading principle. Lumber supplied the armed forces frequently must be rehandled piece by piece, many times, and reshipped great distances.

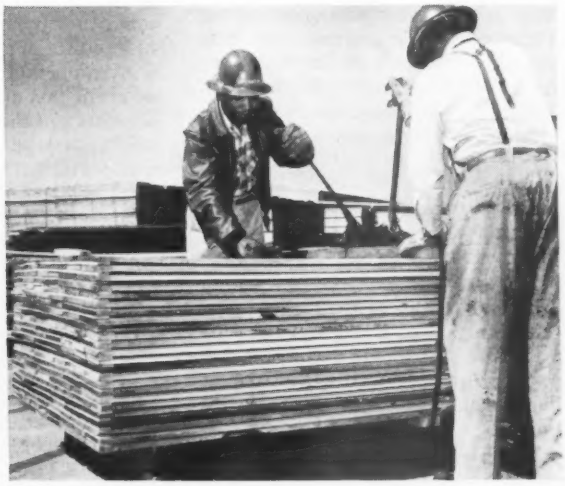
Can your loads retain their unity, from production line to warehouse to truck to train to ship? For Navy overseas shipments, the answer must be affirmative. Those operators whose answer is negative, and yet whose goods make such trips, are not taking full advantage of the profit potential of their operations. If you supply the military, and your answer is "no," you are *also* expending your funds as a taxpayer for unnecessary materials handling.

A good laborer, under favorable conditions, can be expected to shift weights certain heights and distances at predictable speeds. For example, 3 tons per hour, 8 hours per day, 5 days per week in palletizing certain cased canned goods is good productivity per man. How can this productivity be in-

1. Here is the start of making a unit load of lumber. Piles of random length are moved by fork lift truck to conveyor line.

2. Two men then take the lumber from fork lift load and place it on the chain conveyor, after separating pieces by length.

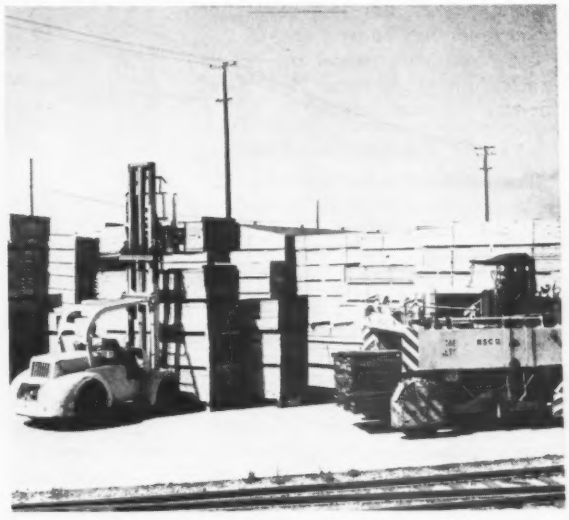
3. Conveyor moves this lumber down a lane past piles of different length. A man picks off those pieces that fit on his pile.



4. These sized-to-length piles are then moved by fork lift to a strapping area, where men bind the loads with steel bands.

5. After strapping, these unit loads are ready for stacking and handling by mechanized equipment. They are then moved.

6. Carriers take them to a storage area, where fork lifts place them in a neat and orderly arrangement, for easy access.



creased? Not by a speed-up, but *by mechanization.*

The number of men whose labor can be brought sufficiently to bear at any one time on a pile of material is limited. How are these limits expanded? Altering the characteristics of the pile, providing better access to more points simultaneously is not enough. Mechanical equipment is again the answer. Materials handling equipment manufacturers either already produce the equipment you need to handle your materials mechanically, or will design the most efficient equipment for your own needs.

Slavish addiction to forklifts or other comparatively expensive units of equipment is not the right approach. Perhaps gravity rollers or low cost conveyors will do the job better, cheaper. Survey not only your plant, but the flow to and from your plant to see where competent engineers can help you select areas of improvement. Above all, think for yourself in mechanization. No one knows your own business so well as you.

What Is Your Problem?

Do you move your material horizontally? Then investigate wheels, rollers, slides, belts.

Do you raise material vertically? What is the cheapest way to do it? The chief function of a forklift is that of a portable elevator. It is an expensive way to move horizontally anything that can be moved as efficiently by trailers.

Which are the most expensive elements in your business?

Do you lack floor space? A portable elevator like the forklift and the proper unit load will add the dimension of height, translating floor space into cubic space.

Your Unit Loads won't support each other's weight? Enclosed pallets, or *pallet racks* may be your answer.

Your consignee cannot use pallets you leave with the load? How about one-way disposable pallets?

Traffic Managers Take Part

Traffic management embraces the entire concept of origin to destination movement of material. Too often, blind devotion to past practices obscures important aspects of this large view; witness the foregoing example of a shipment from California to Arkansas. In like manner, tradition calls for express where early delivery is required, but delivery by other means, such as parcel post, is sometimes actually both faster and cheaper.

The overall test of good traffic management is the procurement of optimum transportation service at minimum cost. Generally the test on which a given operation will stand or fall is an evaluation of variables in the characteristics of the Unit Load related to mechanized handling and modes of transportation. It is essential that traffic management continue in transportation beyond the plant the economies and efficiencies realized through mechanized handling of the Unit Load within the plant. In other words, we must strive for *integrated traffic management.*

Does use of a particular type of Unit Load mean that we can get only 18,000 lbs. in a 30,000-lb. minimum weight carload? If it does, what are we getting for the 12,000 lbs. of "air" we are paying to ship?

Calculate the Advatages

The industrial traffic manager is in the best position to calculate the advantages gained through use of Unit Load from origin to final destination, and to compare these advantages with disadvantages occurring beyond the plant, with a carrier or in a customer's warehouse. Conversely, he should know what units loads should be made up in, to satisfy requirements or desires of carriers and consignees—and be able to show how advantages from such Unit Loads compare with expense.

Does the Unit Load reduce chances of claims and theft? At what cost? Faster unloading, fewer lost packages may increase customer goodwill enough to justify marginal instances of Unit Load shipments.

Demurrage may be reduced by the use of the Unit Load. Who knows but the traffic department? Yet this might be the determining factor in a whole new packaging program for the industry.

One pallet load vs. 42 boxes; here obviously costs of documentation and marking may be reduced.

Will the Unit Load increase rating, or does it meet classification requirements as to packaging? Should the machinery you are shipping on skids have been blocked higher when the load was made up, to meet the carloading requirements of the railroad? Perhaps a cross member on a Unit Load container prevents loading two abreast in the standard truck width. If the container could just as well have been designed originally with the cross member out of the way, the lost space and delay in shipping is the responsibility of traffic management.

Does the Unit Load meet your dunnage requirements? Is the excess weight over 500 lbs. allowance worth its freight cost, in materials handling economies at either end?

Traffic management must be prepared to recommend or criticize Unit Load and materials handling equipment specifications; must help shape materials handling policy from origin of material to destination; and must assist every department in putting to use the concept and handling of the Unit Load.

A great need exists for exchange of information between materials handlers. A constant appeal must be made for the further application of reason to materials handling.

This increased speed of materials handling, saving dollars in time of peace, will be a critical factor in survival—lifesaving, in event of war. Logistics mobilization plans demand of every industry tonnage outputs that stagger the imagination.

Pre-Packaged Lumber in Unit Loads

WESTERN INDUSTRY for July, 1949, carried a comprehensive article on the decrease of lumber cargo-handling costs. This decrease was a result of using (1) packaged units of lumber, sized at the mill, and (2) a specially-designed ship, *M. S. Rolando,* to transport them.

In order to bring our readers up to date on this development, Irwin-Lyons Lumber Co., operators of the *Rolando* (and now also *M. S. North Bend*) inform us that:

"These vessels have been making weekly turn-around trips between Coos Bay and Los Angeles, carrying approximately 650M feet (sized and surfaced lumber) per trip.

"Aside from these vessels furnishing transportation for our own lumber, the big feature shown is a distinct preference for lumber shipped in packaged units. This has enabled our customers to cut handling costs in their lumber yards and keep their yards in neat shape, besides making the inventory problem one of little concern.

"This method of shipping lumber has considerably lessened sales resistance."

Your Loading Dock Is Another Spot for Saving Money

Paving the working surface is the first step in speedier movement

EVERY individual company that operates profitably has little individual problems requiring individual solution from within that company. Just to see how a transportation company overcame their materials handling "irritations," *Western Industry* took a look-see at Savage Transportation Co., 1400 7th St., San Francisco.

This is what we found:

They were operating a freight warehouse-and-loading-platform in San Francisco to transfer freight from pick-up trucks to highway trailers, and from highway trailers to delivery trucks. Every day nearly 500,000 pounds of freight moved across that platform, an ordinary wooden dock.

Freight was palletized as it came from the trucks to be transferred, and regular hand trucks moved these pallets. But it was found that (1) heavy weights could not be moved easily across the floor by hand trucks, and (2) the floor construction (it was very bumpy) would not permit efficient use of fork lift trucks.

At a cost of around $1,800, that 3,800 sq. ft. floor area was covered with 3/16" steel plate. Next, at a cost of about $20, the steel plate was paved with a mixture of bitumuls and sand. Then a couple of fork lifts were purchased to whisk the palletized good about.

Result: (1) overtime was reduced from 45% to 15-20%; (2) more goods moved faster with the same amount of labor; (3) the loading dock was a safer place to work; and (4) storage space was used much more efficiently.

Savage has made and tried many different types of pallets. Both two-way and four-way units have been constructed of lumber, plywood, and metal in different combinations. They have settled on two-way pallets of 32" x 40" size as the most economical, and so far the pallets made of lumber have proved best for their use.

Two-way pallets are of more rigid construction (as well as less expensive) and the Savage people have found that the unit loads of goods can be stored in such manner that they can be picked up again with a two-way pallet just as easily as with a four-way one. How the unit loads are stored is the key to that pallet cost reduction.

Some goods are quite light in weight but large and awkward (such as a tank). This requires fitting "shoes" to the fork lift tines, so that a fork lift truck can pick it up.

Standard fork shoes are supplied by manufacturers, but Savage found these ready-made units were too long for their particular use. So they measured and fit, and had some custom-made shoes fabricated by channel iron and welding, that serve their purpose admirably. These channel iron shoes cost somewhere around $7 to $8, against $40 for new ones.

Another little problem that was forever cropping up is the slight difference in height between truck body and dock level, during freight transfer. Many different types of portable ramps have been offered to smooth the way for freight transfer, but none of them seemed to do just the job wanted. Either the ramps were too heavy for one man to carry and move into position, or they were too awkward to handle, or they would not stay in place, once positioned, or they were too expensive.

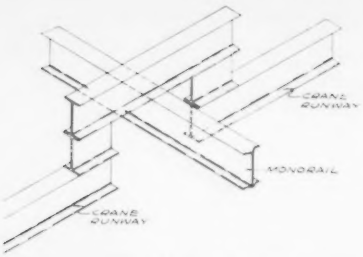
So again, Savage designed one, had it made, and liked it so well that they now have a number of them that save the firm time and money every day.

Here's how they are constructed:

Ramp plate is a piece of ¼" steel diamond plate 2' x 4'. A piece of 3/16" steel plate 28" x 10" is welded to it on the longitudinal center line, in the middle. To reinforce this "fin," a piece of ¼" thick angle iron about 2" x 2" x 28" long is welded to both ramp plate and fin. And the fin has two 6" dia. holes cut in it to lighten the weight.

In use, the "fin" is dropped between truck and dock, and serves as a stabilizer and permanent location point as long as the ramp plate is in use. Thus, (1) this ramp plate is light enough for one man to move easily; (2) it is quite inexpensive; (3) it does the job required of it, and (4) it can never shift out of place.

• Just a simple idea and a "home-made" truck ramp, but it works and saves dollars.



• This crossover design is main reason why this tramrail system works so well.

Express Line Tramrail Speeds Foundry Output

ONE simple idea applied to solve an age-old manufacturing problem has worked out so well for the Lodi Iron Works, Lodi, California, that their daily production has also been increased by 25%.

Their original problem, like that of most other small foundries, lay in getting the molten iron from the holding ladle into the molds with a minimum of manpower, and before the iron had cooled off too much.

In their small (60′ x 100′) converted Quonset, ten molders used to prepare sand molds for six hours at a time. Then, when pouring time arrived, these molders, plus between five and seven other men, would knock off and pour castings by hand.

At best, it was a helter-skelter process. These men had to grab hand ladles, fill them with about 75 pounds of molten iron from the holding ladle, and rush to the molds before the iron became too cool to pour.

Time was one factor; safety was another, and with men dashing about a foundry with ladles of molten iron in their hands the process was hazardous. Until Henry H. Kaiser, president of Lodi Iron Works, began to wonder if there might be a better, faster, safer way to do it.

End result is a special tramrail installation in that foundry that spells the difference between profit and loss —between man-hours spent and man-hours invested—between a hazardous operation and safety.

All this difference is possible because of the tramrail installation, and how it operates.

This foundry main building is divided in half longitudinally so that the floor area is composed of two bays. For purpose of identification, they are named as Bay A and Bay B in this article. Over each bay is a tramrail running longitudinally, a double-track affair with tracks about 25 feet apart.

At the building's center point, on one side, is the cupola and holding ladle, immediately adjacent to Bay A. Directly above the holding ladle and running along the building's lateral center line, is another tramrail, a single-track affair that runs about two feet higher off the floor than the bay tramrail tracks just described. This lateral single-track tramrail is permanently in position in Bay A only, and it crosses the double-track at right angles.

Bay B has a set of double tracks, as noted, but they are about two feet higher off the ground than the double tracks of Bay A. These tracks are the same height as the lateral single track; by means of a quick interlocking mechanism, when one of the crane bridges in Bay B are lined up with the single track line, a chain hoist (carrying a ladle of molten iron) may be immediately transferred from the holding ladle directly into any spot in Bay B, wherever there are molds to be filled.

Crane bridges in Bay A can be brought into position on the building's lateral center line directly beneath the single track, and pouring ladles then filled from the holding ladle and immediately transferred to any spot in Bay A, wherever there are molds to be filled.

Hence, any point within either bay can be immediately spotted and heavy loads of molten metal transferred to it and poured into the molds, with no loss of time and very little danger to personnel.

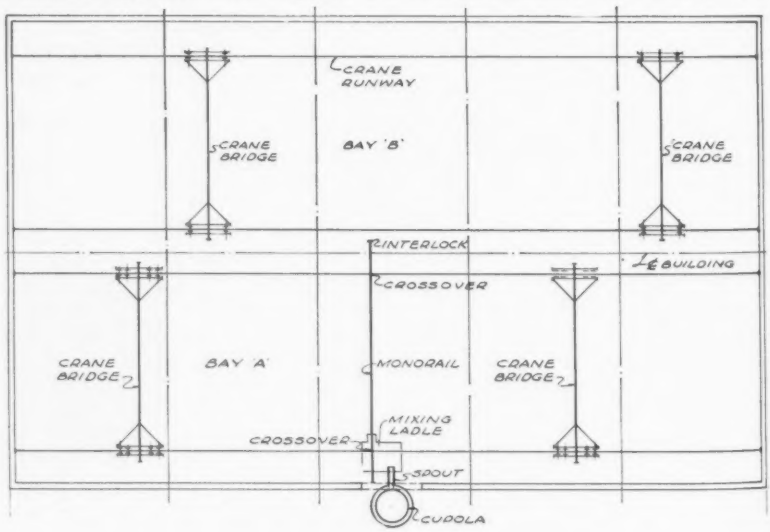
Double tracks of the tramrail in Bay A are intercepted at the lateral center line of the building and so designed that the single track line cuts right through them without interfering with their operation. Without such an "express line" in the design, the system would have required one extra movable crane bridge (at a cost of around $300) that would always be there but seldom used and generally in the way, when "hurry-up" pouring time is at hand.

As this system is now being used, ladle handlers are not needed. Ordinary commercial chain hoists do the job better and faster, with less danger.

Where the firm used to employ between 35 to 46 men, now they employ about 30. Where they used to employ 10 men to mold on a six-hour shift they now employ seven molders to work an eight-hour shift (and mold all that time). And where the firm used to produce x amount of castings per day, they now produce x plus 25%x castings.

California Tramrail Co., San Francisco, engineered and installed this system, including the novel "express line" track.

• Bird's eye view of Lodi Iron Works, showing how the tramrail installation integrates department operations.. With "express run" across the building, much labor is saved.



"Don't Let It Happen" Is the Way to Stop Loss and Damage

I—Matson Attacks the "Unholy Three" of Shipping

"CARGO damage, pilferage, and shortage are an 'unholy three' that plague the shipping lines. Each of them causes a loss to our customers, who have to stand the expense of everything—including the price of goods, cost of packing, and inland and ocean freight charges." So stated Capt. John M. Van Orden, administrator of Matson Navigation Company's damage prevention division, in an address before the Oakland World Trade Club. Here is the way he presented it:

Steps taken by Matson to eliminate these factors are manifold. For example, when claim experience or complaints from a consignee indicate that a certain product is consistently outturning in a condition other than perfect, a thorough investigation is made.

That shipment is watched closely when received at the loading pier. Packing is examined, and if the goods came by rail car the method of carloading is inspected. When goods are stacked on the dock, that operation is observed to see if damage could be occurring there.

Stowage Is Studied

Stowage in the vessel is studied. Ships' officers are made aware of the problem, and the carriage of the goods at sea is investigated. The port of discharge is contacted so that they may be apprised of the problem and an outturn report is submitted by them.

If the carloading is contributing to the damage, photographs are taken and sent to the shipper with a letter explaining the situation and making suggestions for correction.

Ships are equipped with cameras so that the officers may make factual, illustrated reports on all phases of the carriage of the goods and its discharge at destination.

A shipper is not approached until we have checked and verified our facts, and are certain that the trouble is not caused by either us or another carrier.

In some cases we have suggested a *downward* revision in packing standards. Several firms have come to us and stated that due to the expense of packing they are unable to compete in Hawaii. In these cases we have gone to the shipper's warehouse and examined his packing.

Some of the things we found were amazing. One firm was building a fine crate around a small coil of rope. Another was placing as durable an article as a truck spring in a case. Another firm, acting upon our suggestions, later stated that they had reduced their crating costs as well as the number of employees in their shipping department, and for the first time in years was in a strong competitive position in the Islands.

Pilferage is a costly annoyance. Here and in Hawaii, though it is bad enough, it is not the major problem that it is on the East coast.

We combat pilferage by means of watchmen on the docks and in the ships, special lockers in the vessels to protect pilferable cargo and the use of "Small Package Containers."

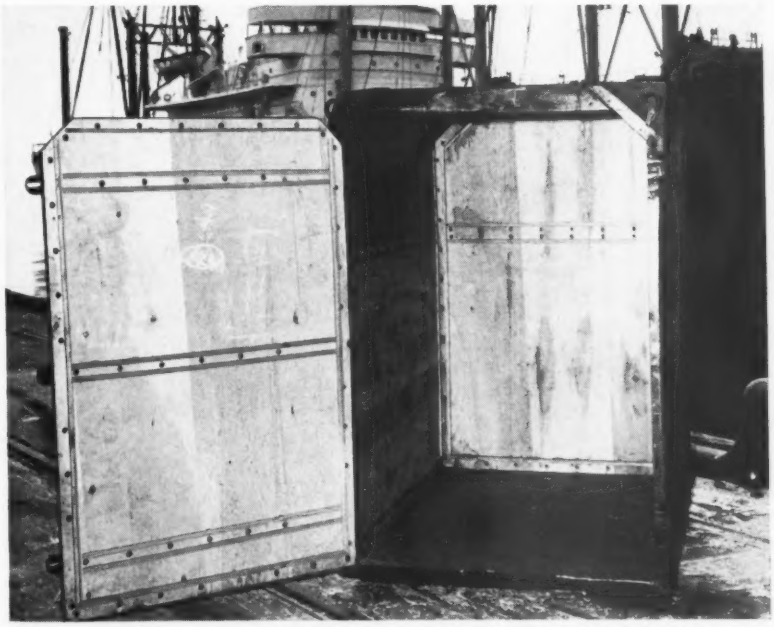
These containers, of our own design, are filled on the dock with small packages that could become lost easily and cargo of small size but high value. Drugs, small arms, small radios and valuable spices are but a few of the many items on the list for this type of stowage. As a result of these efforts our pilferage is now the lowest of the three classifications.

Shortages of entire packages are of grave concern to us. Shortages are, for the most part, the result of the human factor—clerical errors.

These can occur when the cargo is received on our docks or when the cargo is delivered at destination. We are combating this situation by means of a training program for the supervising clerks and others on the clerical staff.

Another element that contributes to shortages is poor marking on the part of the shipper. If old marks are not obliterated, if the mark consists of a typewritten tag or sticker, if the mark is in variance with that shown on the papers, if the port of discharge is in-

• Small package containers such as this are effective means of combatting pilferage.



correct, the chances of the cargo going astray is increased many fold.

Often second hand cartons are used. If that carton bears old postage stamps the package often winds up in the post office and much delay in delivery results—with annoyance for all.

How many of you shippers have ever inquired of your customers the condition in which your goods are being received? You must remember that in most cases the consignee files his claim directly with the carrier and the shipper may never hear of it. The shipper thus feels that all is well and that his package is perfect.

Many a shipper is amazed when we discuss with him the enormity of the damage being suffered by his goods.

A letter of inquiry to your customers may bring replies that will startle you. Those replies may reveal to your sales manager the cause for a market drying up; they may indicate that your goods are being sold in the salvage market.

Any claim is an economic loss that takes something from the pocket of each of us. Anything that can be done to stem this unprofitable flow of funds will be a benefit to all industry.

II—Southern Pacific Checks Carloading Practices

IMPROPER container material or design, rather than improper handling by the railroad, is the cause of many loss and damage claims, the Southern Pacific felt when it launched an aggressive attack on the claims problem immediately after the close of the last war. Systematic study and work on the problem for several years has proven highly effective.

At the outset of the campaign the railroad's freight protection service was reorganized. E. H. Schmitt was named Container Engineer. His function was specifically to cooperate with shippers on problems of container specifications and design.

Safe arrival of merchandise could be better insured, it was felt, by attacking the problem where the shipment originated, namely, at the packaging plant. Approach to the problem was to be scientific, utilizing the services of an engineer skilled in this field working directly with the shippers.

Patrons of the railroad were quick to recognize the advantages of proper container design. They found that the container engineer often was able to show them how less expensive containers could give them better protection than the wasteful designs formerly in use. Aim has been to increase effectiveness of containers without increasing overall material and labor costs, and to make containers less cumbersome and easier to handle.

In one instance, a shipper of furnaces distressed by damage and loss of market, requested assistance.

Existing container specifications and carloading practices were checked by the container engineer. He found that one model of furnace, packaged in a nailed wooden crate, was giving considerable trouble.

Under his advice this crate was then redesigned, using scientific construction principles which increased the strength of the container by approximately 700%. Material and labor costs for the new container were about 33% lower than for the old container, and the tare weight was reduced so that now four such furnaces can be shipped for the previous cost of shipping three.

In another instance, a campaign was instituted by the railroad to canvass the many manufacturers of canned goods along the railroad's lines for ways to reduce damage to canned goods shipments. Examination of the containers showed that a majority of shippers used containers with excessive inside dimensions that allowed the cans to rotate and to shift, causing label chafing and denting of cans.

It was also found that despite precautions in carloading, these excessively large containers were liable to severe creasage that damaged both containers and contents. The "bonded block" or pattern loading was recommended to decrease the possibility of shifting and saw-toothing of containers.

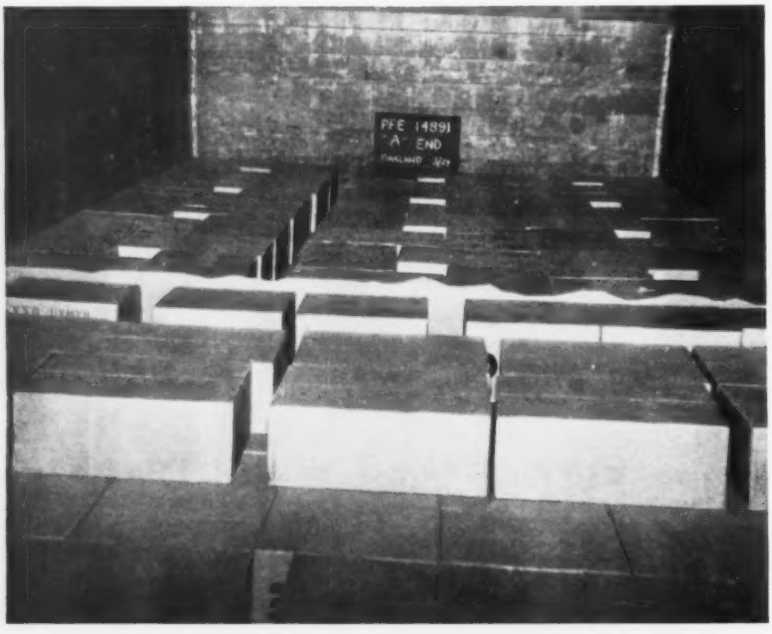
Improvement in the arrival condition of recent shipments of canned goods is believed to be the result of this extensive campaign. One of the major shippers of canned goods on the West Coast has made experimental shipments using containers whose inside dimensions have been greatly reduced, thus effecting a saving in container costs while increasing the protection for shipments.

It has been shown that lengthwise shift of cartoned canned goods in freight cars is reduced and that damage to containers and contents is less in the redesigned carton than when using the standard cartons.

The Freight Protection and Station Service Department has been instrumental in obtaining and developing many improved methods of handling less-than-carload freight through adoption of palletized containers designed by the department.

This type of container is a skidded platform having plywood sides and a removable front gate. Shipments susceptible to damage can be loaded in these containers, and the containers

• This is a "bonded block" method of boxcar loading to prevent shifting of containers.



then handled by mechanized fork lift equipment. This minimized handling greatly reduces the possibility of damage to freight and expedites the movement of shipments.

Through development of standardized loading methods for shipments of commodities in drums and barrels, much has been done to prevent damage.

Recommendations to shippers to standardize container specifications have eased the shipper's procurement problem and have simplified carloading.

Southern Pacific's Freight Protection staff has done considerable work with shippers of heavy machinery in designing crates and in supervising carloading. Shipments have been followed through to destinations to ascertain effectiveness of loading methods.

Lumber, sacked commodities, bulk freight, furniture and other types of shipments are continually being studied so patrons can benefit by the advice of trained experts fortified by actual railroad experience.

The improved loss and damage record of 1949 is credited not to any one person or department but to several departments of the railroad working together, and to the cooperation of the shippers and handlers without whom the improvement could not have been accomplished.

III—Union Pacific Tackles Container Problems

PROPER packaging for shipping is analagous to an insurance policy for the shipper. The right sort of container will pay off in dividends of respect by the consignee, for merchandise received promptly and in good order. It may also provide an advantage over competitors less careful of that important detail.

Costs of loss and damage in shipments used to be an ever-increasing expense to both shipper and carrier until the Union Pacific Railroad did something about it. About three years ago they created the position of "container engineer," and filled that post with Warren R. White, a packaging expert of 20 years' experience. Since that time, C. A. Gregory was added to the staff. Both men are available to shippers with packaging problems.

In line with the container engineer's policy of not being satisfied with superficial diagnosis of container failures, here are some samples of the type of loss and damage which might never have been corrected but for the persistence of these sleuths:

Shipments from a particular stove manufacturer were showing an unusually high damage, according to records. Much care was exercised by both shipper and railroad in packing and handling of these shipments, but damages continued steadily.

Investigations showed that containers were adequate, and handling was proper. Then the engineers went so far as to dismantle one of the damaged stoves and study its construction. This effort revealed that a structural design of the bolting on the stove created a weakness which showed up when the merchandise was moved. A small adjustment in construction corrected this failure, and future shipments showed practically no further damage.

A manufacturer of plastic partitioned cases experienced damage from cases cracking. Container analysis disclosed that the plastic products required a protective inner packing, which these engineers designed and developed. As a result, further damage from cracking was eliminated.

A packing company experienced a high rate of damage from dented cans. White and Gregory were puzzled especially after they found that the shipping containers were adequate. Detailed tests, however, showed that in some cases the vacuum capacity of the cans was overtaxed by overloading, which made the cans susceptible to denting.

Do's and Don'ts

The following do's and don't's are included in the railroad's new packaging pamphlet, "If It's Worth Shipping, It's Worth Packaging Right." These pointers can help the average shipment reach its destination in "shipment shape":

DO . . .

Prewrap articles having sharp edges or projections, in single-face corrugated paper, kraft, or other suitable material to prevent puncturing the carton;

Add a few drops of vinegar to water used for moistening sealing tape. It helps adhesion;

Reverse cartons sealed with glue so that weight of contents will exert pressure on flaps to assure glue bond;

Nail all wooden containers carefully, avoiding "shiners";

Nail top and base of wirebound crates when so required;

Remove old marks when reshipping in original container.

DON'T . . .

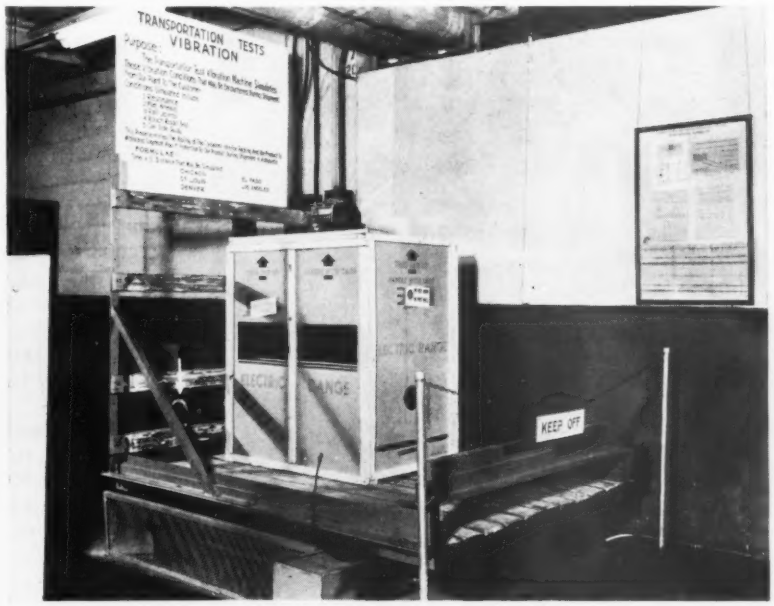
Glue cartons off square or with gapping flaps. This generally results in container failure;

Handle or disturb cartons sealed with glue until glue has set. Usually takes 12 to 20 minutes;

Apply sealing tape in a cold place;

Apply sealing to cartons that have been stored in a cold warehouse until they have been brought to room temperature.

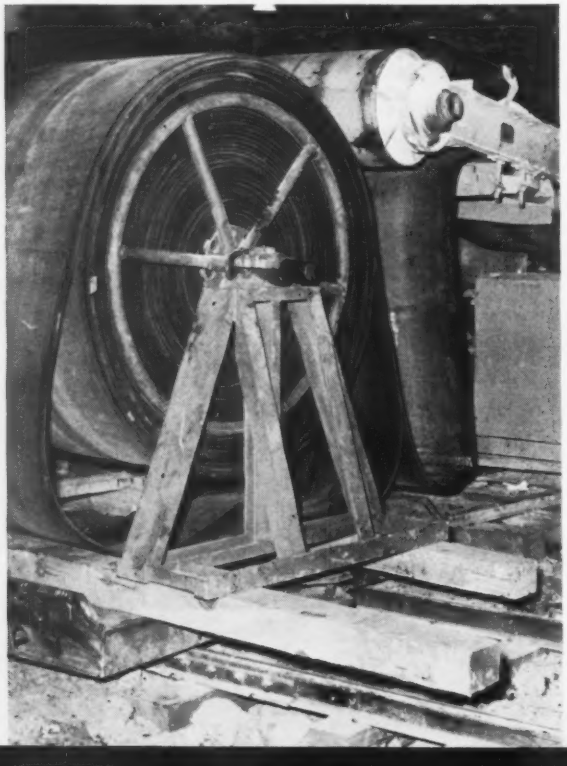
• Testing a shipping unit for vibration check and possible damage that might result.

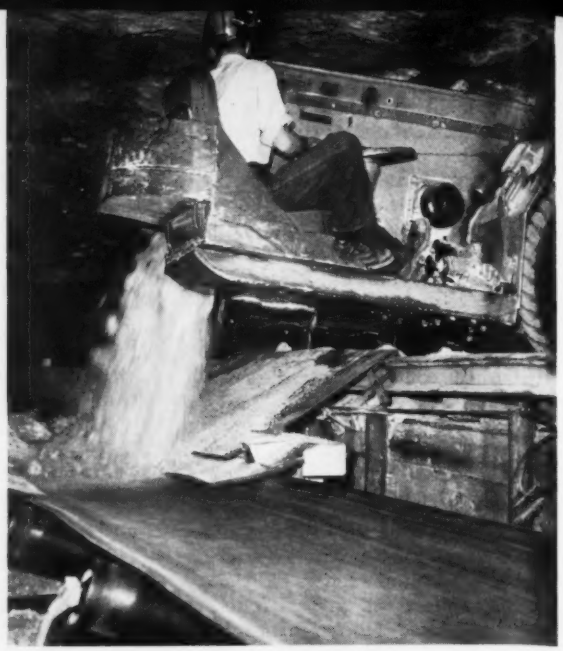


1. Discharge end of this mine conveyor system. From this point, rail cars transfer the material out of the mine to be processed.

3. When conveyor is moved, here is how it is done. This dolly picks up conveyor bed and rolls it into position where needed.

4. And this is how the belt is moved. Rolled on reels, mounted on rail trucks, it is placed into position and assembled again.





2. Ore, after blasting, is loaded by this caterpillar-mounted loading machine onto a portable conveyor belt and taken out.

Conveyor Flexibility May Answer Your Problems

IN THEIR potash mine at Carlsbad, New Mexico, Potash Company of America have proven that conveyor belts are superior to locomotive haulage where (1) steep grades are encountered, and (2) where ore is less than six feet thick.

Each belt is about 800′ long. It is installed to discharge onto cars in one cross entry where much attention has been given to engineering layout of the double track and crossovers.

Ore, after being blasted, is loaded by a caterpillar-mounted loading machine into shuttle cars. These cars are driven to one of three loading stations, where they run up a ramp to the unloading point. There, the ore falls on an inclined plate from whence the material slides onto the belt in the same direction the belt is traveling.

When the mine faces have advanced 250′, one 800′ section of the conveyor is disassembled and moved ahead to the new position, where it is set up again.

In order to prevent complete shutdown while moving, two 800′ conveyors were purchased instead of one 1600′ unit. Operations proceed in one-half of the panel while one section is being moved.

It was found that the size of boulders that could be handled depended on the belt speed and idler spacing. At belt speeds in excess of 350 f.p.m., large boulders caused damage to idlers. But with a belt speed of 350 f.p.m. or less, boulders weighing up to 400 or 500 lbs. could be handled successfully.

Also discovered was the fact that closer idler spacing was advantageous in transporting lumps at higher speeds. Use of diverting chutes to load the ore on the belt in the direction the belt is running has proven to be a practical method of loading.

Efficiency of panel crews has been increased 20%, and hazards of locomotive operation have been eliminated.

Operating Methods Survey

(THIRD INSTALLMENT

How many plants in *Western Industry*'s survey have definite methods, standards, or production engineering programs? 122 reported "Yes"; 86 "No"

SOUTHERN CALIFORNIA

	Yes	*No*
Western Methods	24	6
Eastern Methods	6	1
Mixed Methods	4	1

NORTHERN CALIFORNIA

	Yes	*No*
Western Methods	9	14
Eastern Methods	3	1

OREGON

	Yes	*No*
Western Methods	10	14
Mixed Methods	....	2

WESTERN WASHINGTON

	Yes	*No*
Western Methods	34	35
Eastern Methods	2	3
Mixed Methods	2	1

EASTERN WASHINGTON

	Yes	*No*
Western Methods	2	3
Mixed Methods	1	1

IDAHO

	Yes	*No*
Western Methods	5	....

UTAH

(Origin not segregated)

Yes	*No*
15	3*

**One report says: "Done at Home Office."*

COLORADO

	Yes	*No*
Western Methods	5	1

Designations "Western," "Eastern" and "Mixed" indicate whether methods and systems were independently developed in the West, or formulated by eastern management or parent company, or are a combination of both. Numbers indicate number of plants.

DO MOST Western industrial plants know just where they are going? That is, do they have definite Methods, Standards or Production Engineering programs?

In the survey of 211 plants in the West initiated by *Western Industry* now being reported (of which this installment is the third), 122 plants had such programs, while 86 did not. Is this a satisfactory percentage?

Some of our readers think the survey very definitely shows that the plants having so-called "Eastern methods," that is, developed in the more mature industrial climate of the Atlantic Seaboard and the Middle West, are more systematic and methodical.

They also point out that Southern California is distinctly in advance of other areas in the West. Last month W. L. Barnes of Cutter Laboratories, Berkeley, president of the Society of Industrial Engineers, said the data published in the first two installments indicated two startling things; first, that Southern California appears to be advanced and Northern California distinctly retarded in the recognition and use of production staff services. Ore-

What the Survey Is . . .

A COOPERATIVE effort by *Western Industry*, eight universities in the West and a number of management consultants to assemble facts about management and operating methods in industry in the West.

Reports from 211 plants in California, Oregon, Washington, Idaho, Utah and Colorado were obtained through a detailed questionnaire. Results were tabulated by *Western Industry*, and the first installment appeared in our March issue. The series covers, in general, the following ground:

March issue: How 211 Plants in the West Organize Their Operations. (Covers division of functions).

April issue: Methods of 211 Western Plants: Do They Compare with Yours? (Covers organization charts, communications, manuals, review of division of functions).

May issue: Do Your Operations Proceed According to a Plan? (Covers methods, standards, and production engineering programs).

June issue: Production Control and Labor Efficiency. (Labor costs, time study, wage incentives, quality control).

July issue: Other Cost Controls: Inventory and Budgets.

Number of full-time employees per plant engaged in such activities?

(Figures in left-hand columns indicate total number of employees in the plant; right hand figure indicates how many full-time employees engaged in activities listed above.)

Southern California

Western Methods

250-300	1
15-60	6
9	1
5	3
2	3
1	3

Eastern Methods

15-30	2
6	1
3	2
2	1

Mixed Methods

100	1
8	1
3	1

Northern California

Western Methods

15 employees	1
5 employees	1
2 employees	1
1 employee	1

Eastern Methods

15 employees	1
12 employees	1
5 employees	1

Oregon

Western Methods

7 employees	1
3 employees	1
4 employees	2
3 employees	1
2 employees	1

Mixed Methods

4 employees	1

Western Washington

Western Methods

35 employees	1
25 employees	2
10 employees	1
6 employees	1
5 employees	3
2 employees	3
1 employee	9
Can't estimate	1

Mixed Methods

55 employees	1
10-15 employees	1

Eastern Washington

Western Methods

5 employees	1

Utah

60-120 employees	4
30 employees	2
5 employees	1
3 employees	1
0 employees	2

Colorado

Western Methods

75 employees	1
8 employees	1
6 employees	1
3 employees	1

NUMBER OF PART-TIME EMPLOYEES PER PLANT ENGAGED IN DEFINITE METHODS, STANDARDS OR PRODUCTION ENGINEERING PROGRAMS

Southern California

Western Methods

4 employees	10
1 employee	3

Eastern Methods

2 employees	1

Mixed Methods

2 employees	1

Northern California

Western Methods

2 employees	2
1 employee	1

Oregon

Western Methods

30 employees	1
8 employees	1
5 employees	1
3 employees	1
2 employees	2
1 employee	3

Western Washington

Western Methods

40 employees	1
10 employees	3
8 employees	1
6 employees	4
1-5 employees	12
Can't estimate	1

Eastern Methods

2 employees	1

Mixed Methods

1 employee	1
None	2

Eastern Washington

Western Methods

6 employees	1
2 employees	1

Mixed Methods

Variable	1

Idaho

Western Methods

2 employees	1
1 employee	3

Utah

10-15 employees	3
3 employees	1
2 employees	1
1 employee	2
0 employees	3

gon is about like Northern California, and Western Washington is somewhere in between, in his opinion.

Mr. Barnes further said the survey revealed that in general Western plants appear to use less staff services than do plants in the West having Eastern policies or methods.

"This data confirms what the Society of Industrial Engineers has felt to be the case for some time," he added. "That is, the West is behind the East in using those staff services which in the East have become routine parts of good management.

"This is especially regrettable because in the West labor rates and material costs are higher to start with and every possible tool available is needed to reduce costs."

Now comes Joseph Trickett, dean of the School of Management, Golden Gate College, San Francisco, and former director of organization planning for Columbia Steel Company, with some similar comment. He says:

"It was a pleasure to have the opportunity of seeing the results of your survey and the material to be presented in your May issue. The data are very interesting from the point of view of Northern California management; in fact, I would say somewhat startling.

"The following is typical of what I mean:

'53 out of 68 Southern California plants have organization charts; only 12 out of 28 Northern California plants have them.

'34 out of 36 Southern California plants have a satisfactory division of functions; only 10 out of 23 Northern California plants have.

'37 out of 41 Southern California plants have their jobs clearly described; only 15 out of 26 Northern California plants have.

'The other Western areas likewise lag behind Southern California in management developments.'

How progressive and up-to-date are Western plants? Follow

METHODS, OPERATIONS, PROCESS DEVELOPMENT — 109 YES; 58 NO

SOUTHERN CALIF.	Yes	No	NORTHERN CALIF.	Yes	No	OREGON	Yes	No	WESTERN WASH.	Yes	No
Western Methods	23	3	Western Methods	7	8	Western Methods	9	7	Western Methods	31	25
Eastern Methods	7	....	Eastern Methods	3	1	Eastern Methods	....	1	Eastern Methods	....	5
Mixed Methods	4	....							Mixed Methods	3	1

PLANT LAYOUT — 100 YES; 64 NO

	Yes	No		Yes	No		Yes	No		Yes	No
Western Methods	21	5	Western Methods	8	9	Western Methods	8	8	Western Methods	30	25
Eastern Methods	6	....	Eastern Methods	2	2				Eastern Methods	....	5
Mixed Methods	4	....							Mixed Methods	2	1

MACHINE DEVELOPMENT OR IMPROVEMENT — 86 YES; 83 NO

	Yes	No		Yes	No		Yes	No		Yes	No
Western Methods	17	9	Western Methods	9	8	Western Methods	9	8	Western Methods	24	34
Eastern Methods	5	1	Eastern Methods	3	1				Eastern Methods	....	5
Mixed Methods	1	2							Mixed Methods	1	2

PRODUCT ANALYSIS — 103 YES; 75 NO

	Yes	No		Yes	No		Yes	No		Yes	No
Western Methods	18	7	Western Methods	10	12	Western Methods	9	10	Western Methods	29	28
Eastern Methods	2	5	Eastern Methods	1	2				Eastern Methods	5	3
Mixed Methods	3	....							Mixed Methods	2	....

UTILIZATION STUDIES OF PERSONNEL AND EQUIPMENT — 82 YES; 98 NO

	Yes	No		Yes	No		Yes	No		Yes	No
Western Methods	17	8	Western Methods	7	15	Western Methods	9	11	Western Methods	20	36
Eastern Methods	7	....	Eastern Methods	1	3				Eastern Methods	3	5
Mixed Methods	3	....							Mixed Methods	2	1

DEPARTMENTS FROM WHICH THE PART-TIME EMPLOYEES ARE DRAWN TO ENGAGE IN THESE ACTIVITIES

Designations "Western," "Eastern" and "Mixed" indicate whether methods and systems were independently developed in the West, or formulated by eastern management or parent company, or are a combination of both. Numbers indicate number of plants.

Southern California

Western Methods

Supervisors	3
Engineering	2
Department Heads	1
Office	2
Estimating	1
Production Superintendent	1
Management and supv	1

Eastern Methods

Supervisors	1
Industrial Relations	1

Mixed Methods

Management and Supv	....

Northern California

Western Methods

Production personnel	1
Department concerned	1
Cost Department	1

Oregon

Western Methods

Supervisory staff	3
Personnel and production	2
Management and Supv	1
Management	1
Production	1
Engineering	1
Sales and Research	1

Western Washington

Western Methods

Owners	1
Union	1
Part of Management Personnel duty	3
Various Departments	2
Supervisors	5
Management and Engineer	1
Personnel	1
Foreman	1
All except office and field forces	1
Engineering Department	1
Western home office	1

Mixed Methods

Manager (in addition to other duties)	1

Eastern Washington

Western Methods

Other Departments	1
Manager and Prod. Supt	1
Engineer	1
Supervisory Personnel	1

Mixed Methods

Accounting and Production	1

Idaho

Production	3
Engineer	1

Utah

General Office	1
Management	1
Supervisory Group	1
Outside	1
Production	1

Colorado

Western Methods

Top Management	1

"The usual difference between Eastern and Western management methods seems to be indicated, but the most startling contrast is between Northern and Southern California.

"This would seem to offer a sharp challenge to professional societies such as the Society for Advancement of Management, American Society of Mechanical Engineers, and others, and, also, a challenge to the educational institutions in the San Francisco Bay area. Evidently, we have not been doing the job of management education in this area that has been done in Southern California and the East.

"I should like to express my personal appreciation and gratitude to *Western Industry* for assembling this information. It demonstrates the need for more enlightened management in this area and provides a sound basis for finding out why the facts are as illustrated."

As reported in the earlier issues the 211 reporting plants are of various kinds and sizes, located in California, Oregon, Washington, Idaho, Utah and Colorado.

The number of plants reporting and the types of operations involved include the following:

Southern California: 52 plants.

ing analysis shows what activities the programs above cover

.....Does your program cover how to do these fundamentals, and how to do them better?

EASTERN WASH.	*Yes*	*No*	IDAHO	*Yes*	*No*	UTAH	*Yes*	*No*	COLORADO	*Yes*	*No*
Western Methods	3	1	Western Methods	2	2		11	4	Western Methods	5	....
Mixed Methods	1	....									

.....You'll trail behind if you don't! Survey shows a surprising proportion overlook this.

	Yes	*No*		*Yes*	*No*		*Yes*	*No*		*Yes*	*No*
Western Methods	2	3	Western Methods	3	1		9	5	Western Methods	5	....
Mixed Methods	....	1									

.....Did your plant "just grow"? Does physical layout control you, or do you control it?

	Yes	*No*		*Yes*	*No*		*Yes*	*No*		*Yes*	*No*
Western Methods	3	1	Western Methods	4	....		7	9	Western Methods	3	2
Mixed Methods	....	1									

.....What's used to make the product is often almost as important as the product itself.

	Yes	*No*		*Yes*	*No*		*Yes*	*No*		*Yes*	*No*
Western Methods	2	3	Western Methods	3	1		15	2	Western Methods	4	1
Mixed Methods	....	1									

.....They pay for labor and equipment, but apparently many plants are settling for less.

	Yes	*No*		*Yes*	*No*		*Yes*	*No*		*Yes*	*No*
Western Methods	3	3	Western Methods	....	4		7	9	Western Methods	3	2
Mixed Methods	....	1									

Metal fabrication, 23; wood fabrication, 4; ceramics, 4; plastics, 3; remainder scattered through cloth and leather, chemicals, gas, electric power, oil, milk products.

Northern California: 28 plants. Food products, 12; metal fabrication, 9; wood fabrication, 7.

Oregon: 29 plants. Wood fabrication, 16; metal fabrication, 8; textiles, 1; dairy products, 1; paper, 1.

Western Washington: 84 plants. Metal fabrication, 36; wood fabrication, 22; remainder scattered through plastics, concrete, textiles, leather, paint, glass, pulp and paper, printing.

Eastern Washington: 8 plants. Metal and wood fabrication, electric power, clay products.

Idaho: 4 plants. Metal and wood fabrication, dairy products.

Utah: 18 plants. Metal and wood fabrication, oil, chemicals, other products.

Colorado: 6 plants. Metal, 5; wood products, 2; rubber goods, 1.

To determine whether Western operating methods are as efficient as Eastern, reports from the plants were segregated according to the origin of their methods and systems. In some cases, the methods are a combination of Eastern and Western ideas, and are so shown.

From Fred W. Neale, chief industrial engineer, Boeing Airplane Company, comes the following comment:

"Many features of an industrial organization are bound to be paralleled, but in looking over such a survey the question automatically comes 'why the difference?'

"I believe this to be entirely the result of individuals from two standpoints: first, the thinking by the individual or group of people setting up an organization as to where they believe a function should be established; and secondly, the fact that in many instances organizations are built around individuals and their ability to pro-

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Designations "Western," "Eastern" and "Mixed" indicate whether methods and systems were independently developed in the West, or formulated by eastern management or parent company, or are a combination of both. Numbers indicate number of plants.

WORK SIMPLIFICATION TRAINING — 60 HAVE PROGRAMS; 123 HAVE NOT

SOUTHERN CALIF.	*Yes*	*No*	NORTHERN CALIF.	*Yes*	*No*	OREGON	*Yes*	*No*	WESTERN WASH.	*Yes*	*No*
Western Methods	17	8	Western Methods	4	19	Western Methods	4	16	Western Methods	11	46
Eastern Methods	5	2	Eastern Methods	2	2				Eastern Methods	3	5
Mixed Methods	3	1							Mixed Methods	2	1

SUGGESTION SYSTEMS — 82 HAVE; 98 HAVE NOT

	Yes	*No*		*Yes*	*No*		*Yes*	*No*		*Yes*	*No*
Western Methods	12	13	Western Methods	6	17	Western Methods	9	11	Western Methods	24	33
Eastern Methods	2	5	Eastern Methods	3	1				Eastern Methods	6	2
Mixed Methods	3	1							Mixed Methods	2	....

STANDARD PRACTICE INSTRUCTIONS — 78 HAVE; 102 HAVE NOT

	Yes	*No*		*Yes*	*No*		*Yes*	*No*		*Yes*	*No*
Western Methods	19	5	Western Methods	7	16	Western Methods	3	16	Western Methods	17	41
Eastern Methods	5	2	Eastern Methods	2	2				Eastern Methods	4	4
Mixed Methods	3	1							Mixed Methods	2	1

METHODS TRAINING — 69 DO IT; 112 DO NOT

	Yes	*No*		*Yes*	*No*		*Yes*	*No*		*Yes*	*No*
Western Methods	12	13	Western Methods	4	16	Western Methods	4	15	Western Methods	18	38
Eastern Methods	6	1	Eastern Methods	2	2				Eastern Methods	6	5
Mixed Methods	3	1							Mixed Methods	2	1

TIME STANDARDS FOR OPERATIONS — 83 HAVE; 96 HAVE NOT

	Yes	*No*		*Yes*	*No*		*Yes*	*No*		*Yes*	*No*
Western Methods	24	2	Western Methods	6	13	Western Methods	7	13	Western Methods	18	37
Eastern Methods	6	2	Eastern Methods	3	1				Eastern Methods	3	5
Mixed Methods	4	....	Mixed Methods	....	1				Mixed Methods	2	1

WAGE INCENTIVE PROGRAMS — 62 HAVE; 122 HAVE NOT

	Yes	*No*		*Yes*	*No*		*Yes*	*No*		*Yes*	*No*
Western Methods	17	8	Western Methods	5	17	Western Methods	6	14	Western Methods	14	46
Eastern Methods	3	4	Eastern Methods	1	3				Eastern Methods	....	8
Mixed Methods	3	1	Mixed Methods	1	.....				Mixed Methods	1	2

JOB EVALUATION PROGRAMS — 56 HAVE; 121 HAVE NOT

	Yes	*No*		*Yes*	*No*		*Yes*	*No*		*Yes*	*No*
Western Methods	16	9	Western Methods	3	20	Western Methods	1	18	Western Methods	12	47
Eastern Methods	7	....	Eastern Methods	3	1				Eastern Methods	....	5
Mixed Methods	3	1							Mixed Methods	2	1

MATERIAL AND WASTE CONTROL PROGRAMS — 101 HAVE; 81 HAVE NOT

	Yes	*No*		*Yes*	*No*		*Yes*	*No*		*Yes*	*No*
Western Methods	15	11	Western Methods	8	15	Western Methods	12	7	Western Methods	33	27
Eastern Methods	4	3	Eastern Methods	2	2				Eastern Methods	1	4
Mixed Methods	3	1							Mixed Methods	2	....

mote or develop certain types of work rather than being a straight theoretical function."

A scoring on division of functions, organization charts and communications reported in the April issues gives the following results:

Organization charts: 119 plants in the survey reported they had charts; 112 did not. In 72 cases the charts were available at all times to executives and supervisors; in 17 cases they were not available.

Division of functions: In only 67 plants is there a system provided for periodic review and modification of the system of divisions; 126 plants had no such system.

As to each person having a clear idea of the desired manner of carrying out his or her duties, 179 plants reported "Yes," and only 18 "No." When it came to having the instructions in writing, however, only 80 followed this practice, while 122 plants did not.

Organization manual: 64 plants reported having them; 134 did not. For policy manuals the score was about the same, 60 plants having, 140 not having.

Procedure manuals seem to fall in much the same ratio, 53 plants having them, and 140 not. *Job description manuals* are a bit more popular, at least as far as the survey reports go, with 77 plants using them and 121 not.

New employees bear out the general average on manuals, with 62 plants reporting use of them, and 139 plants doing without.

Various additional manuals were reported, covering sales, accounting and other activities, but not dealing with production and supervision.

In some instances the programs reported in this third installment of the survey were only partial, or were in process of being installed. Some of the smaller plants indicated they felt definite programs were beyond their reach. Other small plants said these activities were carried on by the owner himself.

One illuminating note made by an interviewer, said, "Top management complacent" (evidently the opinion of someone further down the ladder).

.....A sure-fire money-saver, but plenty Western plants haven't yet dug this pay-dirt.

EASTERN WASH.	*Yes*	*No*	IDAHO	*Yes*	*No*	UTAH	*Yes*	*No*	COLORADO	*Yes*	*No*
Western Methods....	1	5	Western Methods....	....	4		6	10	Western Methods....	2	3
Mixed Methods	....	1									

.....A controversial question. Administration and follow-up are the key to success here.

	Yes	*No*		*Yes*	*No*		*Yes*	*No*		*Yes*	*No*
Western Methods....	3	1	Western Methods....	....	4		11	5	Western Methods....	1	4
Mixed Methods	....	1									

.....Is your "best way" reduced to writing? If not, how can it be understood or policed?

	Yes	*No*		*Yes*	*No*		*Yes*	*No*		*Yes*	*No*
Western Methods....	3	1	Western Methods....	1	3		8	8	Western Methods....	3	2
Mixed Methods	1	....									

.....Pays off in tangible dividends, easily obtained with no investment but a stop watch.

	Yes	*No*		*Yes*	*No*		*Yes*	*No*		*Yes*	*No*
Western Methods....	1	4	Western Methods....	....	4		8	8	Western Methods....	2	3
Mixed Methods	1	1									

.....Better think it through in your specific case before deciding what you are going to do.

	Yes	*No*		*Yes*	*No*		*Yes*	*No*		*Yes*	*No*
Western Methods....	2	3	Western Methods....	....	4		5	11	Western Methods....	3	2
Mixed Methods	....	1									

.....Unless you know what jobs are or should be, how about your job relations problem.

	Yes	*No*		*Yes*	*No*		*Yes*	*No*		*Yes*	*No*
Western Methods....	1	4	Western Methods....	....	4		5	10	Western Methods....	4*	1
Mixed Methods	1	....									

.....The "forgotten man" of industry, but he's rapidly fighting his way up to the front.

	Yes	*No*		*Yes*	*No*		*Yes*	*No*		*Yes*	*No*
Western Methods....	2	2	Western Methods....	....	4		4	10	Western Methods....	2	3
Mixed Methods	1	....									

.....No wonder controversy is rife, if you can't prove the hours each job should take.

	Yes	*No*		*Yes*	*No*		*Yes*	*No*		*Yes*	*No*
Western Methods....	2	3	Western Methods....	4	....		13	3	Western Methods....	2	3
Mixed Methods	....	1									

Why Stop Production Thinking at the End of the Assembly Line

There is where to start developing planned distribution

By BOYD R. LEWIS

Member of first Joint Army-Navy Packaging Board, and formerly in charge of USN. Bu. Supplies & Accts. Materials Handling and Packaging Program

INDUSTRY in this country is geared in thinking and action to tool up for production in quantity of practically anything. We have proven ourselves under fire. We can produce faster, and we can produce cheaper per unit than anyone else in the world.

But there, at the end of the production line, we stumble. We become confused and in the end do not carry out the job of moving the materials to the customer with the same planned precision used to manufacture them.

Some of us use inappropriate equipment, old time handling methods, such as the one-box-one-man method. Our shipping rooms, warehouses and transportation methods do not use the same well planned, streamlined methods that were used in the manufacturing department.

If we stop to review this situation it will become evident that there is no excuse. We have the tools to do the job. The techniques and practices are well known to the materials handling industry as well as is the application of the equipment and methods.

Perhaps it is because in our hurry and scurry to produce at a low unit cost, we have lost sight of the fact that a dollar earned by streamlined production methods and fast equipment can easily be lost in the packaging and materials movement end of our business.

Materials handling, as an *industrial science,* is relatively new. Methods and procedure developed by industry were augmented and enhanced by the efforts of industry's materials handling engineers working for and in the armed forces. All of this knowledge is available to Western industry through materials handling equipment organizations.

In planning to capitalize on the savings available by use of modern materials handling methods and equipment there are several fundamentals which, when adhered to, give the best results:

1. Consider the problem in its entirety from the producer of the raw materials to the ultimate consumer of merchandise.

2. View the problem from the standpoint of material *FLOW*.

3. Package so as to take advantage of the material *flow* plan.

4. Don't do the job yourself. There are so many new developments appearing almost daily, that it will pay to have a good materials handling engineer do it for you. He will bring together the best and most applicable equipment and methods.

5. Consult with your customer as the plan is evolved, for he is in for some savings also.

6. Consult with your suppliers. In many cases the plan may actually start there. (More about this later.)

From the producer to the last point of multiple distribution in multiple packages—*That is modern thinking* in the materials movement field—From the canning line in California through the cannery warehouses, into freight cars, into the distributors' warehouses on the Eastern seaboard, and finally to the large food retailer in unit loads. Not one case at a time but *forty* or *fifty* cases of 24—2½ at a time in a pallet load.

BOYD R. LEWIS

It takes four to six husky men all day to unload a box car of canned goods loaded loose—but one girl with the proper piece of equipment can unload the same tonnage, palletized in less than one hour.

Another example—a soap manufacturer could buy his cartons and other materials from the producer palletized on expendable pallets. He could split the cost of the pallet with the producer, who has gained considerable by its use in handling the product as a unit load to the distributor's warehouse. In this operation everybody wins.

Supplier of the basic product saves much more than the cost of the pallet. The distributor has a tremendous financial advantage, for he receives unit loaded shipments. These handle quickly and at a low cost, and the soap manufacturer has *really* cut handling costs both *incoming* and *outgoing*.

Besides this they all save in warehouse space. The modern slogan is not "go West young man," but "go up for warehouse space savings."

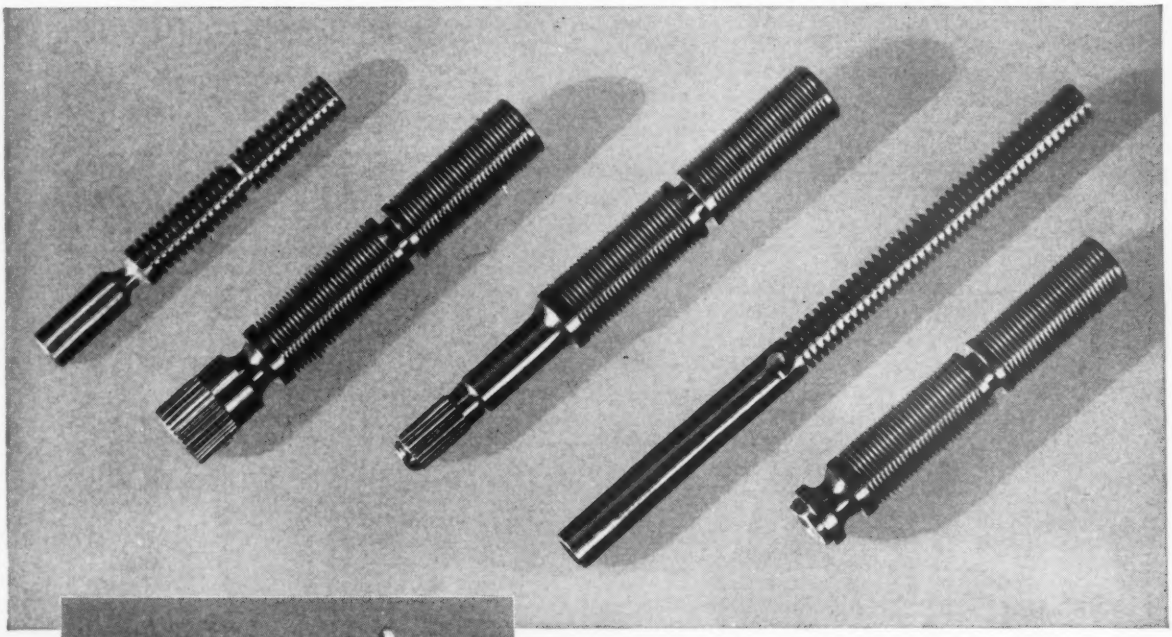
If you are wondering what has happened to that spread between cost and selling price, you can find it easily if you but investigate your materials handling methods.

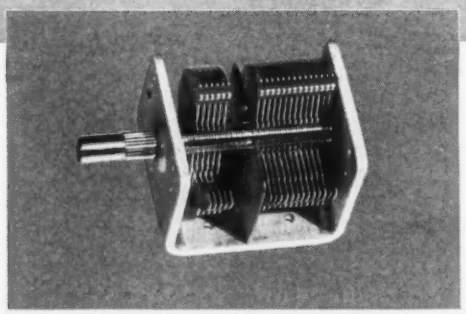
Watch the product—does it go in circles and cross its own path several times? If the answer is yes, your *profit* and *loss* statement will reflect the cure if correct methods are used.

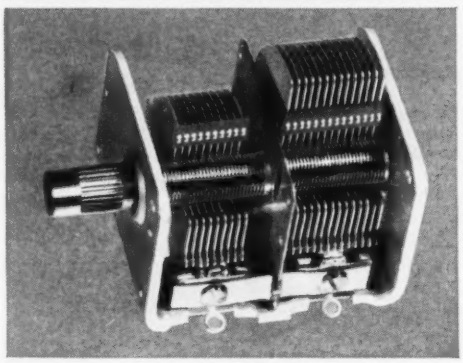
In these times of high labor costs it is too expensive for a man to go away from his job or machine to get materials. They should be brought to him

Continued on page 59

For Tough Machining Jobs, Get REVERE FREE-CUTTING BRASS







Above, Model CS, smallest condenser, air space .009". Below, Model B, largest, air space .013". Rotor shafts, shown in top illustration, are Revere Free-Cutting Brass, plates aluminum. Made by The American Steel Package Co., Defiance, Ohio, an important supplier to the electronics industry.

HERE are several examples of the fact that Revere Free-Cutting Brass is really good. These rotor shafts for variable condensers are cut on automatic machines at 3600 r.p.m. Circular tools are used to cut the concentric slots which are .050" deep. Only one cut has to be taken. Approximately 425 pieces are produced per hour on a 6-second cycle. The American Steel Package Company, Defiance, Ohio, produces a number of different condenser models, with air spacing ranging from .009" up to .042". The slots in the shaft of Revere Free-Cutting Brass are all of the same width, regardless of air spacing, namely .014" plus or minus .0002". It takes good machines, good tools, good men, and good metal to work that closely. A report from a Revere Technical Advisor who had collaborated with the company states: "Customer is outstanding in his praise of Revere Rod." . . . If you have a problem in the machining of brass, why not give Revere an opportunity to work with you? The Revere Technical Advisory Service is at your command.

REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, New York

Mills: Baltimore, Md.; Chicago, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y. Sales Offices in Principal Cities, Distributors Everywhere.

Pacific Coast District Sales Offices in San Francisco, Seattle, Los Angeles.

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Continued on page 59

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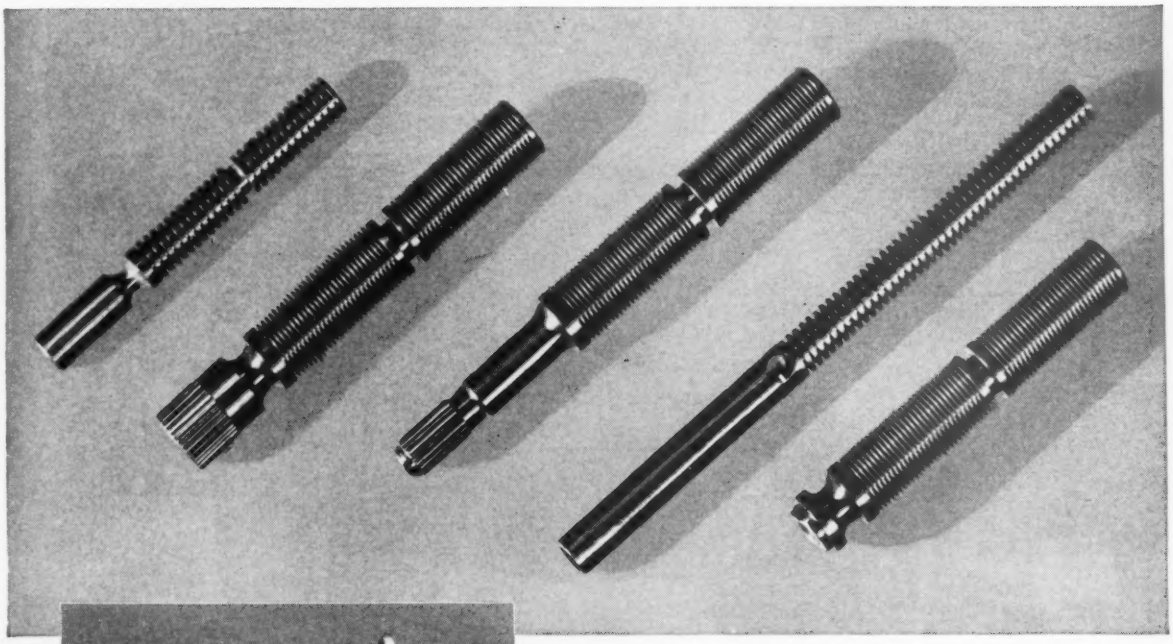

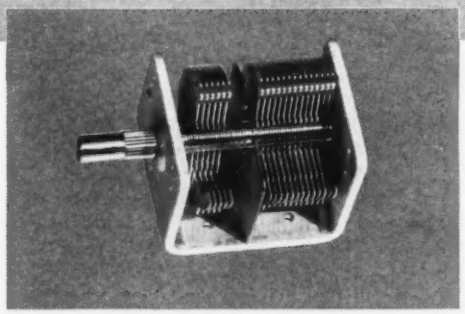

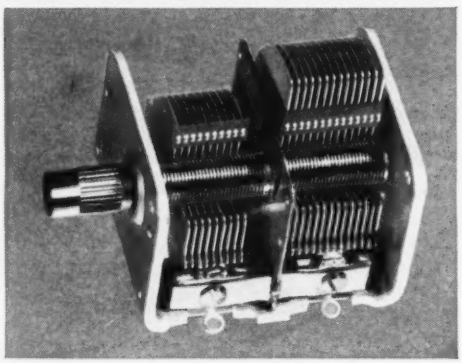

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Sales Offices in Principal Cities, Distributors Everywhere.

Pacific Coast District Sales Offices in San Francisco, Seattle, Los Angeles.

Designed for the West!

NEW "WESTERN" DIESEL LINE OF WHITE TRUCKS

★ **POWERED** by dependable and economical Cummins Diesel Engines

★ **MORE PAYLOAD** because of lighter weight—better weight distribution

★ **POWERFUL and RUGGED** for the really BIG JOBS

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For the Western operator there's a White "Western" Diesel for every load and operating condition!

White's "Western" Diesels feature special transmissions and auxiliary transmissions that provide additional gear reductions to fit the special requirements of the eleven Western states!

Add to this—White's traditional use of light-weight high alloy steels and *proven* aluminum units and you have the ideal combination that assures more profitable high pay-load capacities!

This complete new line of "Western" Diesel Power Trucks, tractors and six-wheelers, have all the quality and proved dependability that has made White's WC models and 3000 series famous for low operating cost...longer truck life...low maintenance for EXTRA earning power.

Ask your White Representative to explain to you today the many reasons why this new Diesel... designed specifically for the West... will give you a cost-saving, efficient answer where the choice of Diesel equipment is advantageous.

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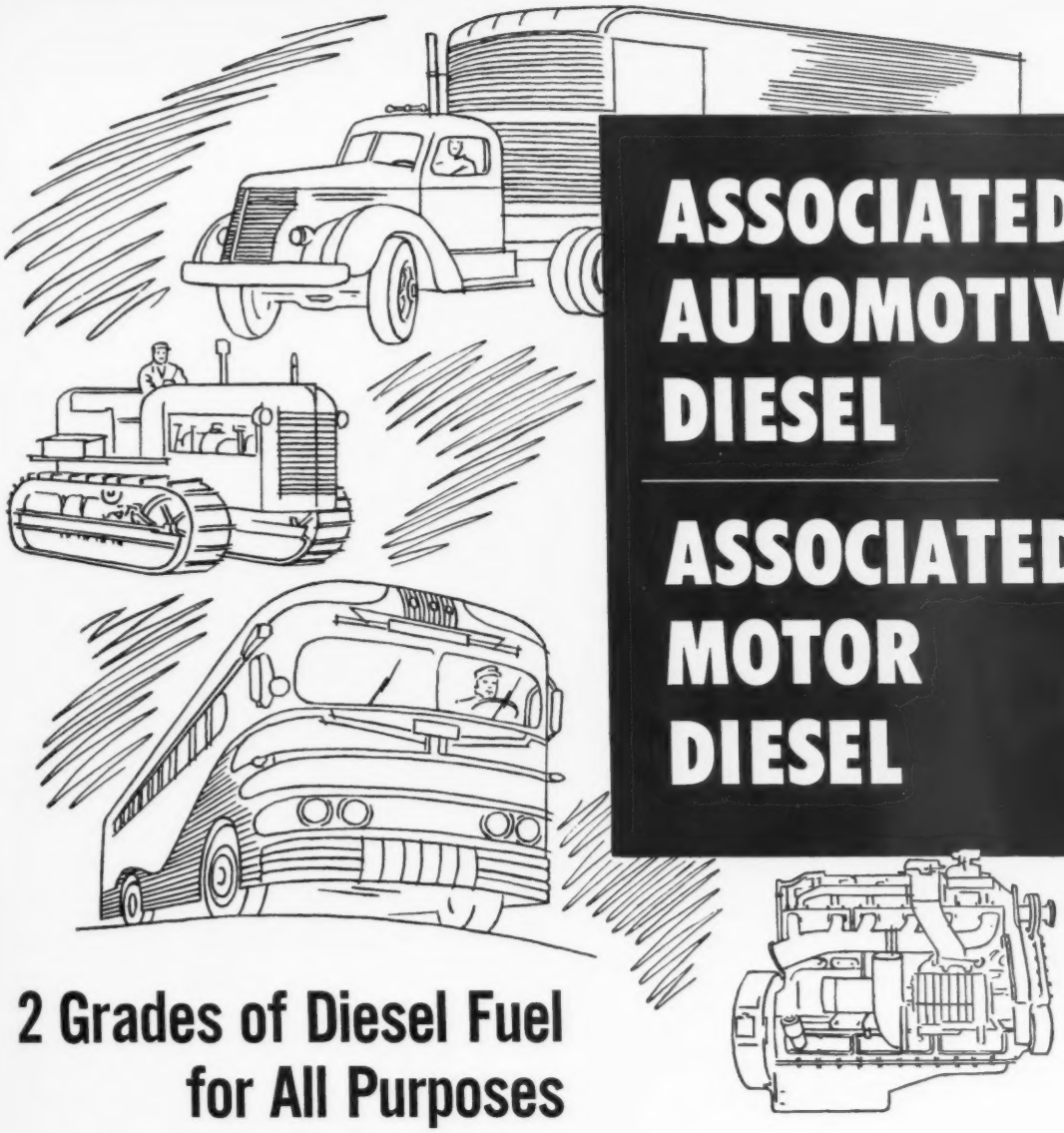

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ASSOCIATED MOTOR DIESEL

2 Grades of Diesel Fuel for All Purposes

ASSOCIATED AUTOMOTIVE DIESEL FUEL is a distilled, highly refined, light colored product made from selected crudes. It is a more volatile fuel than Associated Motor Diesel Fuel and has excellent ignition quality and high cetane. It is especially recommended for General Motors Diesel engines, series 71, Allis Chalmers tractor engines and Gray Marine Diesel engines.

ASSOCIATED MOTOR DIESEL FUEL is an outstanding fuel for high speed diesels. It is totally distilled from selected crude, and specially treated for diesel quality. It is free of suspended contaminants and free-flowing with carefully controlled pour point and flash point—gives complete burning for a cleaner engine—more power. Check its easier starting and smoother idling. Its power will prove itself in better performance. It is ideal fuel for such popular engines as Buda, Caterpillar and Cummins.

Order your trial supply of Associated Automotive Diesel Fuel or Motor Diesel Fuel *now*. They are tops for all diesel uses. Let's Get Associated!

Call your Associated Representative for expert help on any lubrication or fuel problem

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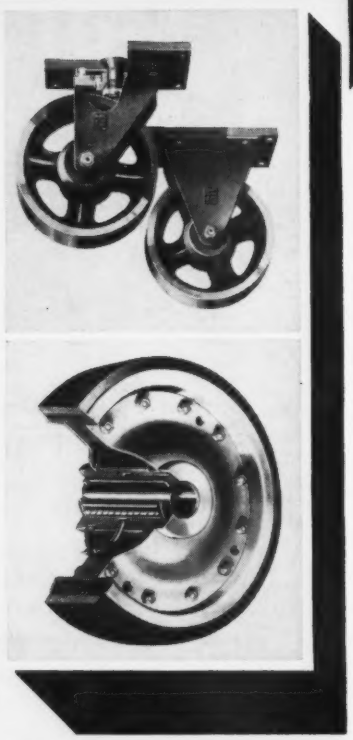
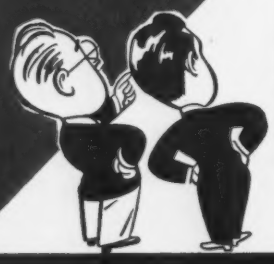
DARNELL
CASTERS & WHEELS
for Every Type of Floor

These durable, precision-built Casters assure the easy handling of heavy loads. Savings in floor and equipment wear soon pay for their cost.

Write for Free Darnell Manual





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60 Walker St., New York 13, N. Y.
36 N. Clinton, Chicago 6, Ill.

Storage Bins Compress 600 Sq. Ft. Into 270

RIVETS, bolts, nuts, small pieces of equipment or parts, are pesky little things to control and store, easily and efficiently. U. S. Steel Supply Corp., in Los Angeles, was bothered with this problem, too, since their inventory of 190 different sizes of rivets was taking up over 600 square feet of valuable floor space.

E. W. Morley, warehouse superintendent, came up with an idea that reduced that space to 270 square feet and controlled the inventory much better.

● This rack can store 25 tons of bolts and nuts of 190 different sizes in 10-gal. drums

This project was accomplished by building a steel rack eight feet high, 23½′ long and 11½′ wide. It consists of four "A" frames with 4-inch 13# H Section acting as an upright with 4″ x 5.4 channels as cross members.

These cross pieces support platforms for steel drum containers. Five platforms on each side contain 19 drums per line, or a total of 190 drums.

Each platform is made of two pieces of 2½ x 2½ x ⅜″ angles positioned 14 inches apart with toes of angles opposing each other.

Drums, furnished by U. S. Steel Products Company, are 22 gauge, 10-gallon steel containers. Each drum can hold 275 large bolts and nuts.

A special side rail movable steel ladder was developed with a platform 24″ x 24″ which gives the order picker ample room for filling orders from containers on top racks.

A unique hook arrangement is used for placing containers on the rack. This hook holds the drum at the precise angle required, and containers can be removed or placed in a matter of seconds.

Continued from page 54

and taken away from him to the next operation when he is through. Conveyor systems, overhead systems, palletized handling of materials, etc., can do wonders in reducing labor costs.

In industrial establishments good housekeeping increases production. Good materials handling methods and good housekeeping go hand in hand.

The minute modern materials handling methods are used, gone is the clutter in the plant. Order prevails—Production is higher—Confusion in materials movement changes to an even *flow* of work and increased quality and efficiency. And costs go down.

Have you warehousing problems? Sure, everyone has. The constant cry of the production manager is, as you well know: "If I only had another warehouse, another 5,000 more feet of warehouse space, or some place to store that 'big order' that I can't deliver until I get it all made."

The answer is: Mr. Production Manager, you already have it. For that 'big order.' If you have not palletized it, you can save 200% to 300% of floor space by so doing. A constant *flow* of material through the manufacturing operation and from the production line to shipping will produce warehouse space from this air.

In considering the savings possible from modern materials handling methods and equipment we are not talking about pennies. Savings of from 100% to 400% are not uncommon. Tools to do the job are available. Knowledge of their application and the most modern methods and techniques are at your call.

This relatively new science of Industrial Materials Handling will help Western industry grow by decreasing costs and increasing profits.

Why stop production thinking at the end of the production line?

Lift Truck Safety

"Unless a special platform equipped with railings is provided, the use of lift trucks to hoist men is dangerous," says Pacific Maritime Association in "Stevedores' Guide," issued by their accident prevention bureau.

Here is a case in point:

In order to inspect tarpaulins covering stacks, a foreman had himself raised by a lift truck. The driver's foot slipped from the clutch, causing the vehicle to jerk. And the foreman lost his balance and fell ten feet.

A ladder may take a minute longer to set up and climb, but if it is secured or held, it is safer than using a lift truck.

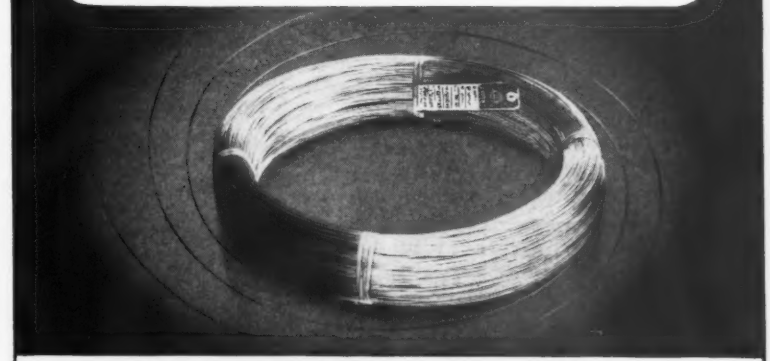
The Salesman:

"Johnson is not a tonnage mill. Although the Johnson line comes under a general heading of high carbon wire, there is a far wider range than that because Johnson draws wire to meet specific applications. Strict laboratory control and supervision assure the customer his own particular requirements will be met. Whether you are in the business of making bobby pins, springs or wire rope, Johnson experienced wire specialists study your problem and come up with the correct answer."

The Customer:

"That is exactly what we want here. Our application is an unusual one and we know enough about wire to realize that it requires careful research, and so we are asking you to show how Johnson meets this situation."

H. Armstrong Roberts Photo



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Storage Conveyors Can Provide An Orderly Flow of Goods

Live storage systems keep production and shipping moving along

By CLAY COLLEY
Manager, Western Division
Alvey-Ferguson Company

ON BEING asked the question "What is the major difference in materials handling systems between the Eastern and Western parts of the United States?" the first thought that came to mind was the apparent lack of storage conveyor systems for packaged goods in the West.

Perhaps there are some such systems on the West Coast; they are everywhere in the East where packages, cartons, sacks and drums are handled.

By storage conveyors, I refer to a battery or bank of conveyors that hold on live storage, a carload or truck-load, depending upon the shipping unit.

These systems, in some cases, consist of five conveyors in each tier which are fed by a single production conveyor indexed automatically, so that a certain portion of production remains on conveyors.

When these are filled, production then goes to pallets for storage. However, a great portion remains alive at all times.

In other words, if 20% or 50% of a day's production goes to cars or trucks, this amount can be stored on conveyors and loaded out with the most economical loading crew possible.

When production goes directly to cars, it is often less than one loading crew can handle efficiently. When there is no live storage, merchandise has to be re-handled while switching, waiting for trucks, etc.

Assume that 1/3 of a day's production is shipped in carload or truckload lots the same day. By employing live storage the third shift does not have to store, load or palletize, and if shipments in carload lots are heavy the next day, the entire output can go direct to cars.

In this case, live storage serves as a useful storage chamber. It is true that the first cost of storage conveyors may seem high, but not in relation to what it costs in man hours, day after day, to put production on the floor or on pallets and then pick it up again in the morning.

When systems such as those described are used, control boards similar to those shown are in common use.

In a recent foreign project a conveyor system was designed to pick up cartons, tied bundles and baskets of coils of hemp, pieces of leather, finished canvas products, sandals of canvas and rope, and leather soles from five specific manufacturing departments.

These cartons, bundles and baskets are fed into a single main line in groups or trains for distribution to various areas in a multi-storied warehouse.

Trains are fed into the main system by an operator at a control panel, who determines which group is to be released first. Then another operator, at a second control panel, checks the advancing trains in motion on the conveyor. At that time he pushes a button which will set up a pattern of travel for that particular train of cartons to a specific area in the warehouse.

When the operator pushes a button determining the destination of a train of cases, electrical equipment is energized which operates hinged belts, deflectors, stops and all other necessary controls required to give that specific train a right-of-way to its destination in the warehouse.

While this program is in effect, additional buttons can be pushed by the operator, setting up a sequence similar to that described above for other trains which may also be in motion on this system at the same time.

There are various automatic check points throughout the system, which maintain separation of trains throughout the system.

If for any reason, there is an interference in carrying out the scheduled travel of any train, the specific train which has gotten out of control is halted and succeeding trains are held in train blocks.

When the five manufacturing departments vary their products it is necessary to vary the warehouse destination. This can be done by the operator merely pushing buttons at the control panel.

This foreign installation has resulted in substantial savings, even where labor rates are much lower than in this country.

The conveyor industry seems to operate in cycles. If you were to study some of the older installations you would find that many of these methods have a place in today's operations.

Here is a good example: During the war considerable effort was put forth to handle palletized loads to and from ships. In a recent review of some old

• **Typical five-bank storage conveyor that keeps production and shipping fluid.**

CLAY COLLEY

materials handling films, I find that cement was handled to and from ships on the construction of the Panama Canal, all on pallets.

This Alvey-Ferguson system resembled the modern banana terminals in the method employed, in omitting tracks or frames on the vertical runs of the loaders.

In reviewing these old films, it was found that the same system for insuring gaps between parcels for mechanical counters was employed 35 years ago as is in use today in connection with modern electric eyes and electronic devices.

There have been a lot of new developments in conveyor applications but there have been few basic fundamental changes.

It is the writer's opinion that *the real frontier for materials handling systems is right here in the West.*

Our industries are expanding at a rate where live storage will soon be a factor. Lettuce and melon producers have increased to a point where they are now employing the method of picking on conveyors, as formerly developed by the pineapple growers of the Pacific Islands. The first modern dairy to employ a continuous conveyor system for milking cows on a production line was started in Southern California.

While the West has many new developments and fine installations, it is still a frontier—this time not for gold, but for materials handling systems, and, as is the case all over the world, there is no substitute for the experience of qualified engineers when a materials handling problem arises.

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Educational Side of M-H Not Neglected

MORE EFFORT is being put into the educational side of materials handling on the Pacific Coast this year than at any time in the past. Three outstanding examples are institutes devoted to materials handling, as follows:

The materials handling institute currently in progress in San Francisco, sponsored by the Materials Handling Task Committee of the National Security Industrial Association, the Materials Handling Division of the American Society of Mechanical Engineers, and five other local organizations. It is being conducted under the direction of the School of Management, Golden Gate College, with Dr. Roy W. Kelly, Director of Institutes, in charge.

An institute for Navy and Air Corps Reserve Officers recently held at the San Bernardino Air Base Depot. This was one of four similar institutes conducted in various parts of the country under the direction of Clinton L. Royce of the Office of Naval Materiel, Washington, D. C.

A packaging and materials handling institute at the University of Southern California in Los Angeles, June 12-15, co-sponsored by the university and the Southern California division of the Society of Industrial Packaging and Material Handling Engineers.

There is also a permanent Navy Cargo Handling School in session at the Oakland Naval Supply Depot, with Commander J. K. Webster in charge. Schools and colleges on the Coast are increasing the number of courses directly or indirectly devoted to materials handling.

At the San Francisco institute meetings the specific problem dealt with is reducing port handling costs, so as to make the San Francisco Bay area more competitive with other parts of the country in the movement of marine cargo. The final meeting is to be held May 3 at the Marines Memorial Club, when a national survey of disposable pallets is to be discussed and W. R. Postlewaite, materials handling engineer for Standard Oil Company of California, will outline a case study showing how an engineering survey should be made to determine costs and layout improvements. Harry E. Stocker, nationally known expert on materials handling, a former San Franciscan, will be the dinner speaker.

The problem of pallet exchange brought out much discussion, and W. B. McClelland of the Clark Equipment, Battle Creek, Mich., who has been carrying on nation-wide studies, reported that a workable pallet pool would perhaps be the greatest aid in solution of the question. Purchase of pallets, rather than leasing, is the answer, in his opinion, pointing out that deposits on drums and air cylinders amount to purchase. He suggested the possibility of mill supply houses and merchandise warehouse companies becoming the logical handlers.

But materials handling costs do not just involve physical equipment, according to Frank Foisie, former manager of the Waterfront Employers Association, and chairman of the opening San Francisco institute session. A vast amount of complicated paperwork slows down movement.

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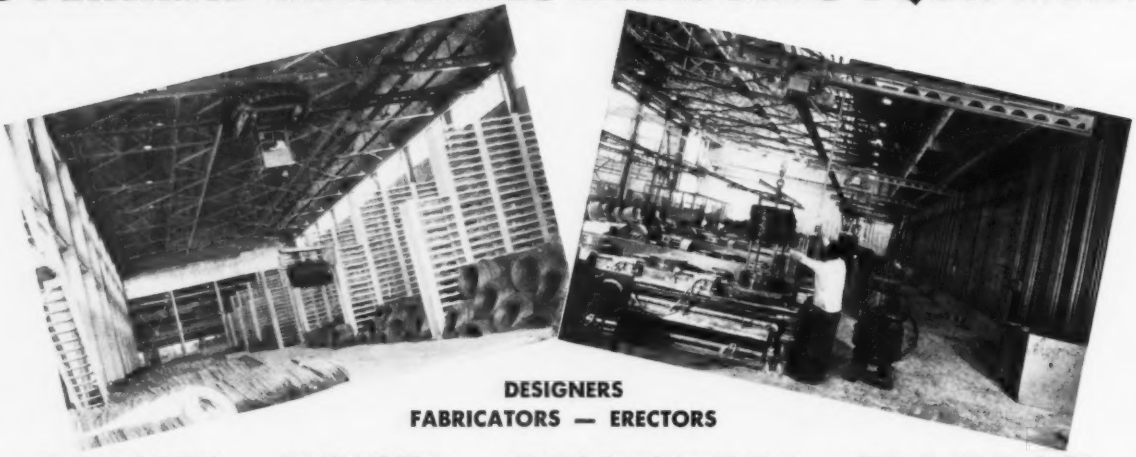

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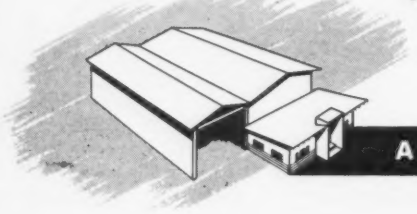

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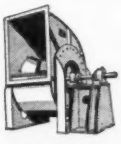
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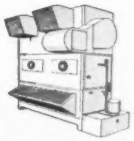
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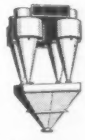
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New Type Containers Stimulated by Western Industrial Development

Improved quality and design apparent in market trends

By MERRILL WOODRUFF

Business Specialist, U. S. Dept. of Commerce, Northern California-Nevada Region

ACCELERATED industrial development on the West Coast has opened up a wide range of new markets for containers and packaging materials. Formerly geared largely to the needs of western agriculture, the container industry now supplies manufacturers of almost all types of products. Present thinking of the industry is that current new construction will be dictated largely by sales and freight differentials.

Present producer planning is largely in the direction of improved quality and design. More money than ever before will be spent to increase both industrial and domestic customer acceptance through attractive, useful, and economical packaging.

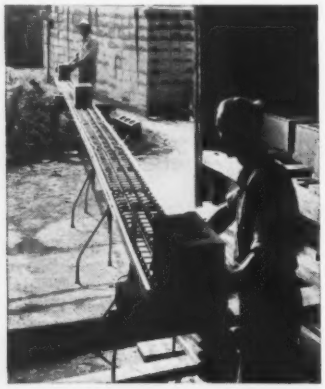
Steel drum and pail producers on the Pacific Coast closed their 1949 books with about an 8% increase in total business over 1948. Budget and sales estimates for 1950, made in December, approximate 1949.

The recent increase of about $9.00 per ton in sheared 18-gage sheets, the largest single raise ever experienced and on a size in greatest demand, is causing drum prices to rise.

Manufacturers of chemicals marketed in drums have taken this increase in stride. But not such high volume users as the oil, grease, and gasoline groups. Their resistance has drum producers considering installation of new squaring and shearing equipment in order to reduce the 18-gage drum costs.

Government contracts for products in 16-gage drums has shown a sharp increase. The most optimistic note, however, is the continued growth of the miscellaneous drum and pail business on the West Coast. Last year production of these types ran between 20% and 30% above 1948. Despite loss of export business and the capacity operation of reconditioned drum plants, the industry expects to maintain the production and sales increases of 1949.

Sanitary can unit production was up about 5% on the West Coast in 1949. This unit increase was sparked by



SPEEDWAYS WHEEL CONVEYOR carries concrete blocks from plant. A standard 10-ft. section can support over 500 lbs. distributed weight. "Double-Duty" construction permits using "Lo" side as shown, with frame as guard rail . . . or "Hi" side, for packages wider than frame.

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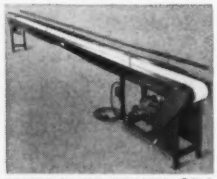

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specialty cans, particularly for fish and nuts. First quarter 1950 business in vacuum pack cans should exceed 1949 volume for the same period, despite the sales decline in canned coffee attributed to consumer resistance to coffee prices. Tin and steel price changes were not significantly reflected in January prices of general line cans. All producers report that the general line can business is steadily improving with the growing economy of the region.

Collapsible Tubes

Collapsible tube production is an infant industry on the West Coast. Yet within two years the initial production capacity has been greatly enlarged and further expansion is now proceeding.

Principal output is in aluminum tubes for toiletries manufactured in the West, although considerable demand exists from drug and chemical producers in the area. It appears that continued local expansion of this industry can be expected.

Glass Containers

Glass container plants in the area are operating above the rate generally expected at this time of year. Many furnaces not scheduled for operation until March, were brought back into production before then.

In 1950, for the first time, every "name" brewer is offering his product in nonreturnable bottles. Wine bottling has been above last fall's expectation. The only change in an otherwise stable price situation has been a slight downward adjustment in liquor bottles.

Plastic Containers

Plastic containers for storage of foods and other products in home refrigerators are experiencing sharp competition from a new wide-mouth

Simplified Bulk Handling

FROM TIME to time in past months, *Western Industry* has run several items discussing bulk materials handling by tote bins. This system, originated in Seattle, Washington, a short while ago, to transport flour in aluminum containers, is growing and developing in true Western fashion.

Original containers are 42" x 48" x 68⅝" high, have a tare weight of 225 lbs., and hold 74 cu. ft. Now a new bin, the "Junior," has been added. It is 42" x 36" x 52¼" high, holds 42 cu. ft., and has tare weight of 175 lbs.

Tote bins are now transporting sugar, salt, rice, powdered milk, seed, chemicals, and liquids. Larger size bins will hold 3,300 lbs. flour, or 4,000 lbs. sugar, or 2,600 lbs. powdered milk, or about 5,000 lbs. salt. "Junior" will hold slightly over half of those amounts.

Nearly any product now purchased in bags, barrels, drums, or in bulk can be handled in quantity more efficiently and cheaper in tote bins.

Original plan was to sell these bins to users. But now Howard Burt & Sons, San Francisco, California distributors, have improved that plan. They have arranged with trucking companies so that these bins may be obtained by users on a lend-lease basis, with the trucking line owning the bins.

Rental fee is based on (1) commodity transported, (2) weight involved, and (3) frequency of bin usage.

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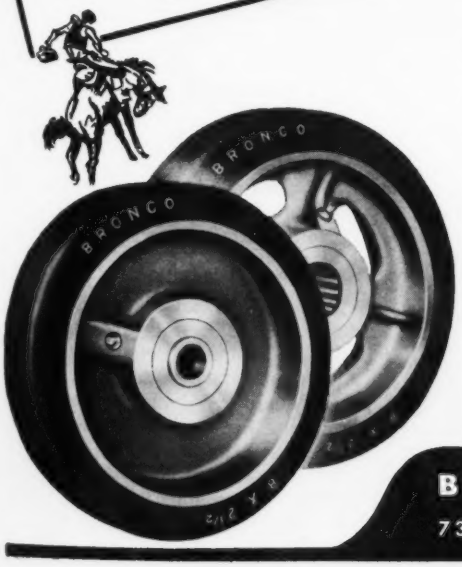

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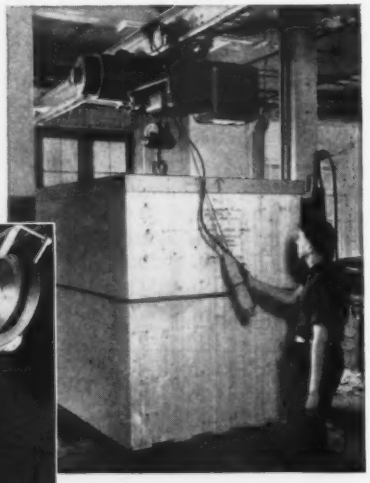

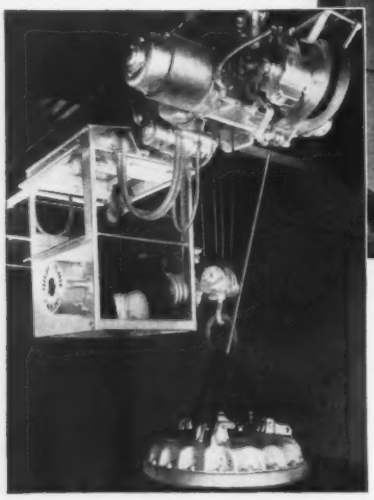

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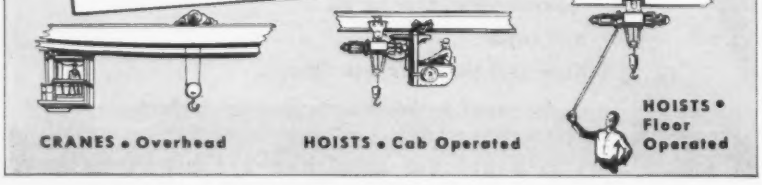

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glass receptacle. Its feature is a combination aluminum and rubber closure which, after moistening with water, produces a hermetic seal. Dehydration and exchange of odor are thereby checked.

Crown Closures

Crown closure production and sales on the West Coast in 1950 are expected to equal or exceed 1949. The fall and winter beer business in the area was 8.6% above 1948, although national figures show an identical decline for the same period. This increase in beer sales may be attributed to the warm, dry fall and winter months, coupled with the steadily increasing demand of a constantly growing population.

Screw Caps

Screw cap production and sales in this territory are somewhat less seasonally affected than crowns. Producers look for increased business in 1950. The industry is stimulating development of high speed screw cap seal equipment. This may result in stiffened competition with vacuum friction cap closures.

Shipping Cases

Solid and corrugated shipping case production and sales on the West Coast always have been very seasonal. With the "growing up" of the region and the continued development of its industrial economy, however, this seasonal influence of food products has been less noticeable.

Augmented markets which are stabilizers for the shipping container industry are in the furniture, stove, and miscellaneous manufacturing fields. Nevertheless, the fish, fruit and vegetable canners and processers are still the backbone of the fibre case business.

All producers interviewed anticipate 1950 sales to be above the identical 1949 quarter. 1950 sales are expected to exceed the past two years. Users are apparently over the inventory jitters and are accumulating normal stocks. The stability of prices on the Pacific Coast accounts, in part, for the steady output of jute board mills here.

New plant construction continues.

Paper Boxes

Paper box manufacturers report competition at an all-time high, and some are having a case of price jitters. Although there is widespread feeling that a quality product cannot compete price-wise in a cut-rate market, this has caused unprecedented activity. Producers know that to retain their position, they must compete with ideas, not with lower prices.

As a result, re-use values are being

How to make a superintendent's eyes sparkle

(A Pioneer Rubber Mills Progress Report)

Superintendents are supposedly cold-blooded—given to little emotion—but PIONEER representatives swear they've seen their eyes light up like short-circuited pinball machines.

Here's an example:

This PIONEER Rubber Conveyor Belt is one of three that speeds production in this modern food processing plant. One belt carries cooked beef; another carries beans—a dash of tomato sauce is added at the right moment and PRESTO!—chili like mother tried to make.

To avoid costly shutdowns—to keep ingredients coming on schedule—PIONEER tailored these conveyor belts to fit the job. PIONEER'S engineering department worked with this Superintendent in eliminating former trouble-making faults: no metal cleats because they were hard to keep clean; no ordinary rubber compound because it would absorb natural meat juices.

The belt PIONEER engineered is a joy to behold, as seen by the eyes of the Superintendent.

1. Conventional belts became worn on the edge, resulting in food spillage. This is now eliminated with PIONEER "SURE TITE" edges that defy wear and fraying.
2. Built-in rubber cleats replaced the former cumbersome, hard-to-clean metal cleats—and they can carry food up inclines as steep as 53 degrees!
3. Amber rubber cover that is impervious to oils and juices.

While rugged construction that eliminated breakdowns was an important factor, ***maintenance savings were not overlooked.*** Cleaning this PIONEER belt with a detergent and water is as easy as washing a dish—no more tedious scrubbing of metal cleats with steel wool. As the cost accountant remarked to the Superintendent, "Unless my slide rule is broken, ***our maintenance time*** has been reduced *90%* on this machine since we installed this belt!"

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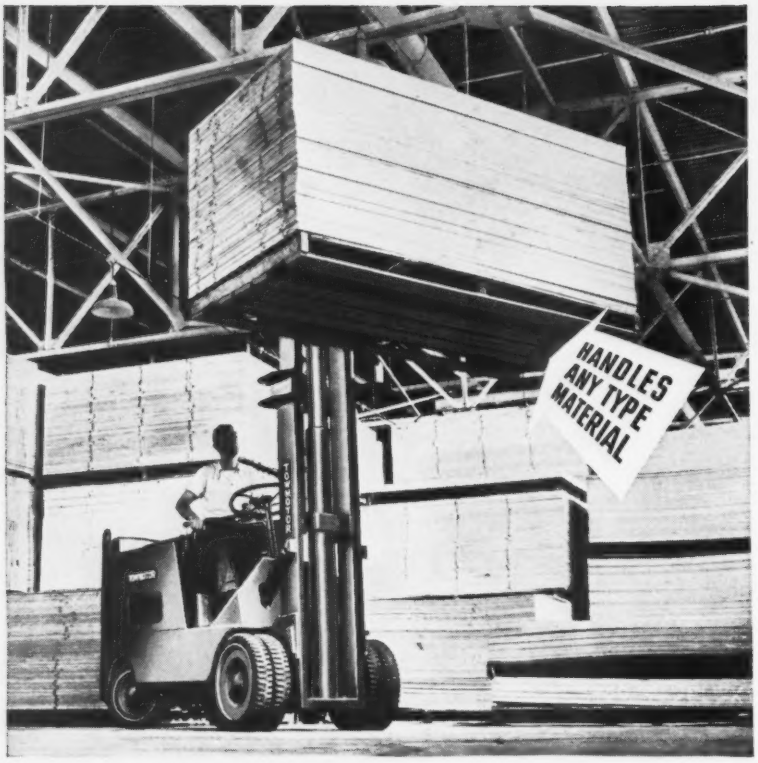

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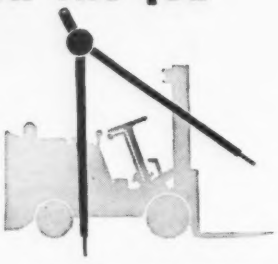
Every powerful Towmotor model is at peak performance 24 hours a day—to keep materials flowing smoothly and without interruption in your plant. There is no letdown in speed or power . . . no "time out" to be revived. Compare Towmotor with any other fork lift truck and you will see why Towmotor's time-tested features make every **M**ass **H**andling job easier, faster, safer. 12 models plus many standard and specially designed accessories handle all type loads from 1500 to 15,000 lbs.—a Towmotor for *every* job. Write for a copy of "Handling Materials Illustrated." Towmotor Corporation, Division 67, 1226 E. 152nd St., Cleveland 10, Ohio. Representatives in all Principal Cities in U. S. and Canada.



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every handling job is easier with TOWMOTOR MH!

TOWMOTOR
THE ONE-MAN-GANG®

FORK LIFT TRUCKS and TRACTORS

RECEIVING • PROCESSING • STORAGE • DISTRIBUTION

stressed along with new waterproof inks and coatings. Use of polyethylene is also being closely investigated as a substitute for asphalt lamination for products which must be protected against moisture changes.

Management seems to be making upward revisions in inventories which were, in many cases, dangerously inadequate.

Paper Sacks

Multiwalled paper sacks sales volume will remain uncertain until the price competition of the last few months is resolved. With steadily improving quality and increased sales, some individuals in the trade think that an upward price movement may be forthcoming soon.

Demand for fertilizer sacks, particularly those used in packaging for home and garden use, has tapered off markedly; bulk fertilizer sales and more extensive commercial use of fertilizers in liquid or gas form are the reasons given. Demand from the feed trade and from cement producers is strong, and shipping sack manufacturers anticipate 1950 sales volume to equal last year, with first quarter orders already equaling or exceeding a year ago.

Kraft paper bag production and sales, which began to climb late in 1949, remain firm even though strong competition seems to be causing many users to resist normal inventory development. Jobber and distributor inventories on the other hand are substantial. Mills lost some production because of adverse winter weather but wholesalers' stocks were ample to care for their trade. This has resulted, however, in suppliers stepping up mill orders. A 45-day mill backlog now exists on most items for grocers bags.

Textile Bags

Textile bag producers report current business of beyond the expected seasonal decline, and believe this slump may be the forerunner of a 20% decline in business this year. The principal causative factor given is the uncertainty in burlap supply and price.

This has and probably will continue to force more and more burlap users into seeking other types of bags where prices and availability present a more stable picture.

The brighter side, however, is in the development of interior laminations on burlap, especially aluminum foil and polyethylene. In the case of foil, laminated textile bags are offering stiff competition to multiwalled paper sacks for the alfalfa meal business. These laminates are slanted toward

the large Western alfalfa meal trade where the valuable carotene content deteriorates in the presence of light and oxygen.

Using ordinary bags, it is reported producers are forced to hold and protect their product in cold storage warehouses where the cost may exceed 20 cents per month per bag. Burlap bag makers hope to gain much of this meal business with their foil laminated bag, the cost of which may be less to the alfalfa meal people than a multiwalled paper sack when high storage costs are added.

Transparent Wrappings

Transparent wrapping firms are expecting a 15% to 20% increase in 1950 on the West Coast. Backlogs are down compared to late 1949, but are above the first quarter of 1949. Plastic bag makers report that requests for design sketches and samples are 50% above 1949.

In the dried fruit field, where some grades have been in transparent bags for some time, processors are now adding their prime quality brands.

Bakery products continue to lead all users of transparent wraps and account for about 50% of all sales of these materials on the Pacific Coast.

Some frozen food packers report use of a new, improved waxpaper outerwrap for 1950, but will retain transparent bags for the inside of the container. All converters anticipate increased proportional use of visible packaging on fruit and produce.

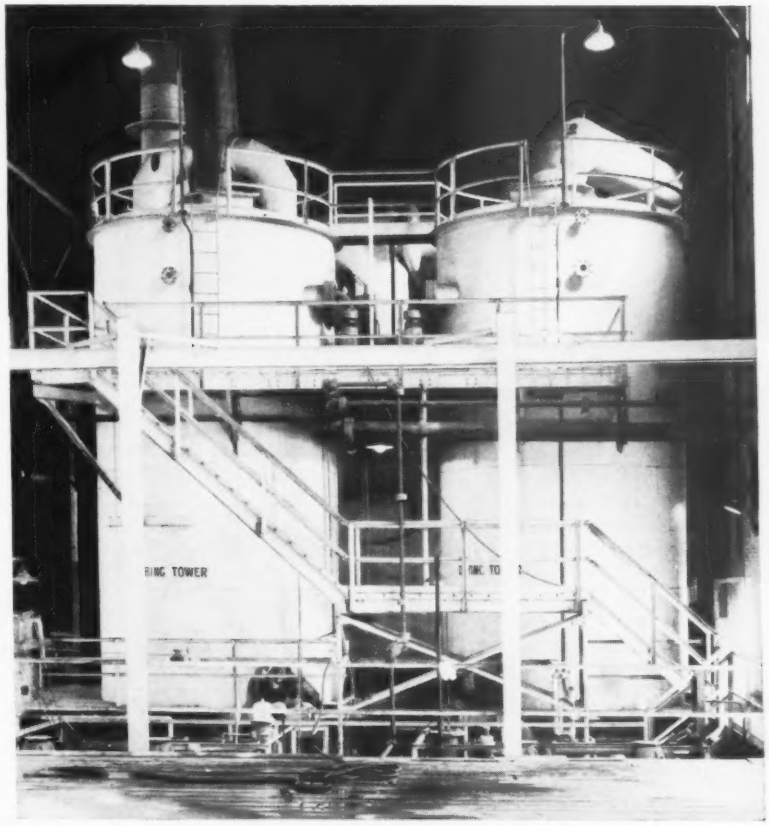
Wooden Boxes and Crates

Wooden box and crate producers on the Pacific Coast anticipate from 10% to 14% less business this year, largely as a result of freezing weather in the citrus area. This loss will be partly overcome by increased sawn crate demand from lettuce growers and other vegetable producers in Texas.

Firming lumber prices, which in January had not been reflected in box shooks, may cause price increases later this year. Production of boxes and shook in the first quarter, a traditionally slow period, is equal to last year, with a noticeable increase in orders from users strengthening their inventory position.

Use of the Northwestern apple box for shipments of green tomatoes to distributors for ripening and repacking in consumer cartons, has been a bright spot in the box picture. It is reported that these shipping boxes, suitably cleated and strapped, are reappearing as field lugs in growers' hands over a wide area. Re-use value has always been a dominant factor in the nailed box business.

Steel Plate Structures for Acid Plant at Garfield



Above: Processing towers at the American Smelting and Refining Company's sulphuric acid contact plant at Garfield, Utah. We also fabricated and erected, at the same time, two vertical heat exchangers, two acid storage tanks, and a converter shell.

The processes used in the manufacture of sulphuric acid at the Garfield, Utah, plant of the American Smelting and Refining Company subject handling and and storage equipment to severe service conditions. But we didn't need a "magic formula" to fabricate steel plate structures that would take this treatment. We simply applied the "know-how" gained from many years experience in supplying such special equipment to the chemical processing industries.

Processing towers like those shown above are one example of the many types of steel plate structures that we design, fabricate, and erect. Others include spherical, spheroidal, and cylindrical pressure storage tanks, flat-bottom tanks, elevated tanks, and structures built of or lined with corrosion-resistant alloys.

• • • •

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Chicago 4	2132 McCormick Building	Salt Lake City 4	568 West 17th South Street
Cleveland 15	2256 Guildhall Building	San Francisco 11	1278—22 Battery Street Building
Detroit 26	1567 Lafayette Building	Seattle 1	1369 Henry Building
Houston 2	2164 National Standard Building	Tulsa 3	1667 Hunt Building

Plants in: BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE, PA.

NEW MATERIALS & EQUIPMENT

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Use this postage-paid card to obtain further information on products mentioned on these two pages and literature listed on following page.

E-5506

Portable Freight Elevator

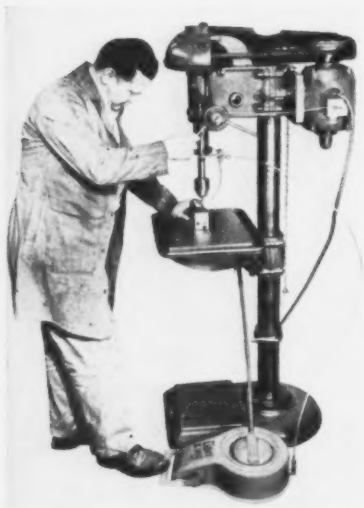
This "Pick-Up" lift gate will attach to the rear of any ½ or ¾-ton pick-up truck. It is operated by two powerful

hydraulic hoist cylinders and will lift, lower, stop, and hold weights up to 800 lbs. A single lever safety control operates it. *Anthony Co., Streator, Ill.*

E-5507

Foot Powered Coolant Pump

A new coolant supply for use on drill press, tapping machine, milling machine or bench, employing a foot-powered pump, is introduced by *W. A. Horejsi Co., Minneapolis, Minn.*

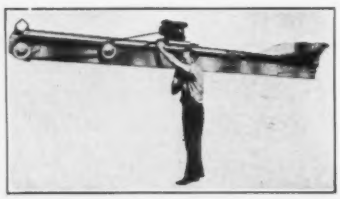


Called "Lubri-King," it weighs less than 10 lbs. empty, is easily portable from one machine to another, holds about 2 gals., which can be screened and returned to the tank. Pedal stroke controls amount of fluid delivered to cutting tool, from drops to a strong steady stream.

E-5508

Handy-Handler Belt Conveyor

Model "S" Handy-Handler is 16 ft. long, has 4 ft. mid-section which increases length to 20 ft. Weighs 119 lbs. with 2 hp., 2-cycle gas engine. Power unit slides off easily to reduce weight of elevator alone to 95 lbs. Choice of open or totally-enclosed electric motor or three gasoline engines. Made of aircraft alloy. Operates at 450 f.p.m., will handle 18 tons salt per hr., or 24 tons coal, or 25 tons sand or gravel. Capacities depend upon operation angle (up to 45°) and power factors. Speeds



can be changed easily. Handled on West Coast by *Keville Industrial Service, Pomona, Calif.*

E-5509

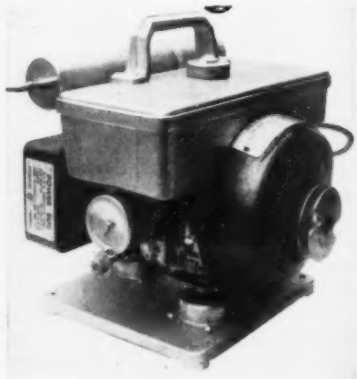
Flexible Chain Conveyor

Chain-O-Flex is a flexible chain conveyor for use where constant flow of material is needed. Quick assembly is easy. All parts are bolted together like an erector set. Variable speeds are obtained by adjusting the band wheel on the drive unit. All corners are flexible and adjustable to any desired degree. Manufactured by *Chain-O-Flex Corp., Franklin Park, Ill.*, and distributed exclusively by *Industrial Equipment Co., Chicago.*

E-55010

Typewriter Size Generator Uses Permanent Magnet

"Power Bugs" will generate from 350 to 1,000 watts in 400 or 60 cycle units, with no brushes, no commutator or slip ring. The rotor, containing permanent magnets, and a wound stator do the trick. There are no rubbing parts. Powered by gasoline engines (aluminum castings). Units weigh about ½ as much as conventional generator sets. The 350-watt, 110-v. AC unit, complete with 1 hp. engine,



weighs about 28 lbs. and is about the same size as a typewriter. *GICO, Arlington, Va.*

E-55011

Drum Opener

In about one minute this 36-lb., manually-operated Head Cutter will remove the top of any size drum, flange the metal slightly inward, and leave no ragged edges. Works on either empty or filled drums, 10 to 55 gals., 20 to

16 ga. Blade will cut about 1,000 heads before dulling and resharpening. Cutter wheel can be replaced with a roller wheel to seal leaky chimes. Available from *Michael A. Schinker Mfg. Co., Chicago.*

Items evaluated by Western Industry's technical advisors on basis of information supplied by producer.

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E 55012

Protective Cover Plate for Welders

A new, clear plastic cover plate to protect costly welding plates from damage, is brought out by *American Optical Co., Southbridge, Mass.* These plates, meeting optical requirements of Fed. Bu. of Stds., do not pit as readily from welding spatter as glass plates. They are .060" thick, available in standard size 2" x 4¼", or special size 2" x 4⅛" on order.

E-55013

Glove with a Grip

Sureseal PK coated fabric work gloves, produced by *Surety Rubber Co., Carrollton, Ohio,* have something new added. It is a highly wear-resistant non-slip finish that gives these gloves effective gripping action in liquids, including lubricants. This griptite finish won't injure metals or machinery, won't crack or peel, will last as long as the gloves. And according to field tests, these gloves far outwear heavily reinforced hot mill gloves. They come in different styles, all molded to a comfortable curved finger design.

E-55014

Steamfitters' Special Packing

That's the name of *Flexrock Co.*'s *(Philadelphia, Pa.)* new self-forming, self-lubricating, stringless packing that will mold itself into any size or shape of solid, lead-like, leak-proof seal to fit any pump stuffing box or fitting. It comes in rope form ⅛" dia. Can be used on rotating or reciprocating parts, handling air, gas, hot, cold or salt water, steam (up to 150 p.s.i.), oils, most acids, alkalis and solvents, ammonia, brine, etc. Comes in ½ and 2½-lb. spools.

Dow Corning Corporation, Midland, Michigan, makers of Sight Savers, (see E-35011, March *Western Industry*) states that "silicones are lubricants rather than abrasives, and extensive laboratory tests have established the fact that Sight Saver tissues are perfectly safe to use on glass and hard magnesium fluoride coatings."

E-55015

Odorless Paint

Odorless paint is now being marketed by *Keystone Paint & Varnish Co., Brooklyn, N. Y.* The unscented characteristic is achieved through a special formula and exclusive process. First product launched is Keystone One Coat Flat Oil Paint for use on walls, ceilings and woodwork.

E-55016

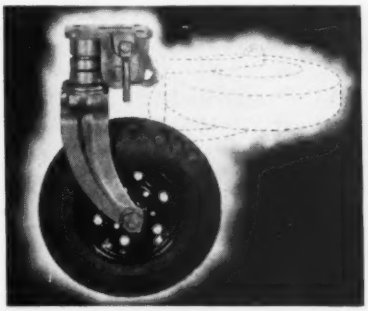
Torque Wrench With Snap and Click

When this PROTO high speed torque wrench reaches its prescribed setting, it (1) trips a signal trigger that (2) gives the user a definite, strong impulse, and (3) a loud click is sounded. User can also watch the pointer advance until proper torque is reached. Series of 12 of these wrenches is announced by *Plomb Tool Company, Los Angeles.*

E-55017

Handy Third Wheel Is Retractable

A new retractable landing gear assembly that can be attached to all types of two-wheel single-axle trailers and provide for easy manual moving of fully-loaded units as well as a steady-rest for unhitched trailers. When used on a trailer being towed, this wheel and fork can be retracted a full 90° and swiveled 90° to clear road obstacles. A snap-action positioning pin locks the gear either up or down. Overall height in down position is 18½". Tires are 12" by 3.50 x 6 pneumatic, either two or four-ply as desired. *United Manufacturing Co., Bedford, Ohio.*



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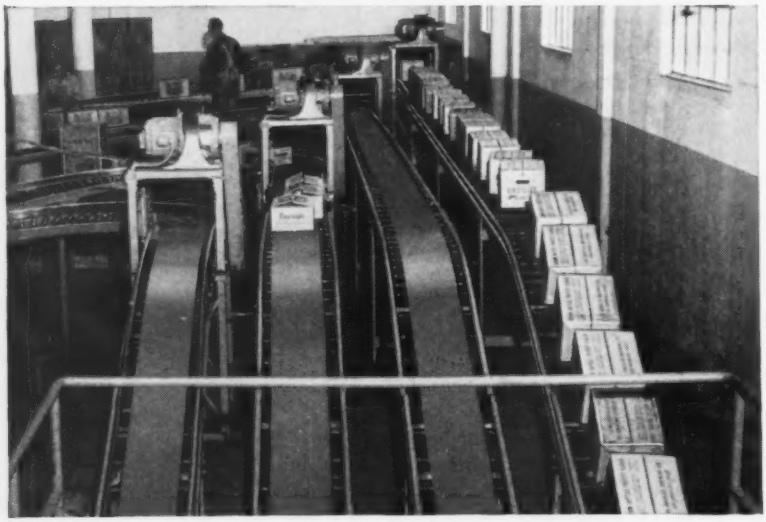

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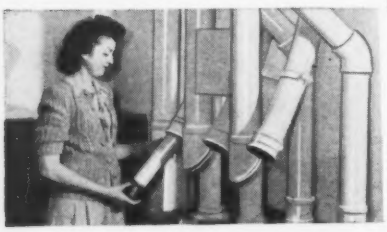
— Order and cleanliness — freedom from congestion — smooth flowing coordinated movement of commodities — these are the plus advantages of roller or belt conveyors, gravity or power, in addition to their time, money, and manpower economies.

2 with the EXTENDOVEYOR

— compact, mobile, easily maneuverable power-belt conveyor unit—handles packages up to 150 lbs.—reaches into cars, trucks, trailers. Available in 4 sizes — 2 models.

3 with PORTABLE ROLLER CONVEYOR

— light, easy to carry and set up where needed. Standard Litewate Sectional Roller Conveyor is a great time and labor saver in loading, unloading, storing commodities. Available in 5 ft. and 10 ft. sections — straight and 90° or 45° curves.



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HELPFUL LITERATURE

for the plant operator who wants to keep informed

5501-L

RIVETED ROLLER CHAINS—is the subject of a bulletin #50-6 published by the *Baldwin-Duckworth Division of Chain Belt Company of Milwaukee 4, Wisconsin*, illustrating and describing the Baldwin-Rex "BA" Riveted Roller Chain Assembly. The Assembly is standard riveted roller chain with a special single pin connector link and is assembled at the two-foot mark and at the end of each basic five-foot length. This new connector has a pin which can be driven out very easily when assembling or disassembling the chain. The publication includes tables, construction diagrams, illustrations, specifications and dimensions.

5502-L

LASTING PROTECTION FOR METAL SURFACES—is described in an attractive booklet published by *The Arco Company of Los Angeles, California*, describing Dum Dum for Metal for the protection of metal surfaces, application methods, and listing the advantages from its use. Requests for copy, written on company letterheads, will receive prompt attention.

5503-L

MOVABLE METAL WALLS — Mills Movable Metal Walls Catalog No. 50 has been designed as a practical workbook for architects, engineers, contractors and other building professionals dealing with problems involved in flexible division of interior space in office, commercial, industrial and institutional structures by *The Mills Company, Cleveland 10, Ohio*. The publication presents a clear exposition of the many important advantages of movable walls. Structural stability, architectural design, adaptability to changing space needs, soundproofing, low maintenance requirements and over-all economy are among the major advantages discussed. Fully illustrated, the catalog also includes complete detailed construction drawings and specifications data.

5504-L

DUST CONTROL IN CERAMIC INDUSTRY—"The Use of Dustube Collectors in the Manufacture of Ceramics" is the name of a new bulletin #252 issued by *American Wheelabrator and Equipment Corp. of Mishawaka, Indiana*. The report is presented in Problem-Solution-Result style. Photos picture various Dustube applications such as: the salvaging of enamel frit, the ventilation of enamel spray booths, and the control of dust in the manufacture of silica brick. Advantages and features of the Dustube are highlighted for the reader who wants quick facts.

5505-L

KIRKSITE DIES FOR QUALITY STAMPINGS—Kirksite dies will produce quality steel stampings for you at tremendous savings in die cost and your time. So say *Western Pressed Metals* division of *Douglas Aircraft Company, Santa Monica, Calif.*, in their brand new 25-page brochure. They also introduce you to the complete facilities and services offered by Douglas in the metal fabrication field.

READING GUIDE FOR WESTERN MANAGEMENT

A service for all management levels . . . current literature surveyed and appraised by the faculty of the School of Management, Golden Gate College

Manufacturing Analysis

By Richard F. Kipers, McGraw-Hill Co., Inc., New York, 1949, $5.00.

This is a valuable primer of mechanical processes used in working on metal and plastics, and a handy reference for engineers and estimators who have to deal with them. It was prepared as a college text for students of mass production techniques, under the sponsorship of the American Society of Tool Engineers in collaboration with a dozen or so independent and corporation engineers.

The function of the tool engineer is broadly defined in "analyzing, planning, designing, constructing, and applying the means and equipment for the mechanical production and manufacturing of industrial and consumer goods and commodities."

As each process is explained, machines for applying it are described, and methods, formulae, and specific data for estimating operation times and costs are given.

Materials handling, assembly, inspection, and tolerance balancing are also discussed from the standpoint of the tool-engineer. One chapter sets out cases of analysis of production methods "to illustrate problems and solutions to typical situations."

This work represents a painstaking effort to assist those (by whatever names their jobs are called) who have to recommend or decide upon the best and most economical way to manufacture things from metal or plastic.

Reviewed by:
A. B. COURT
Lecturer in Manufacturing and Production Management

Insurance Agency Accounting

By Ernest Lawrenson, Prentice-Hall, Inc., New York, 1949, $3.95.

To insurance agents and brokers and to public accountants doing insurance audits and systems work, Lawrenson's *Insurance Agency Accounting* furnishes a wealth of practical, usable information.

The text is divided into three sections: System, Specific Procedures, and Exhibits.

Section One, System, is an outline of a model installation in minute detail. Starting with the basic documents, *such as* the policy, the expiration record, and the line record, the author traces the entries through the Premium Register and other journals, concluding the section with a lucid discussion of the postings to general ledger and subsidiary accounts. The fifty pages which comprise this section contain numerous illustrations of the vouchers and of the special journal forms to be used, as well as many simple, concrete examples of the recording of routine transactions.

Second section of the text contains a discussion of the treatment of returned commissions, account-current, advances on behalf of customers, overwriting commissions, countersignatures, and all the specific procedures peculiar to insurance agencies.

Third section is a collection of pro forma schedules and statements such as might be drawn up for an agency.

The text is not a substitute for a competent Certified Public Accountant in the installation or review of a good insurance agency system. The author of this valuable little manual has had long and close experience in *a particular type of* agency accounting, which experience is simultaneously an asset and a liability.

The description of accounts and recording follow a pattern which has evolved gradually in *old established* firms in the field, and as such gives the newcomer an understanding of the operations and jargon of the trade. But to give the management adequate information and to fit in with current income tax requirements the procedures described are not of the most modern and efficient design.

Despite this fact, as stated by Richard E. Farrar, C.P.C.U., in the foreword: "With agents becoming increasingly alert to the business problems of agency operations, it is certain that this work by Mr. Lawrenson will be most helpful to those agents looking for a means of implementing and improving their accounting records."

Reviewed by:
RUSSELL A. TAUSSIG
Lecturer in Accounting

Briefer Guides From The Management Library

Business Cycles in Selected Industrial Areas

By Philip Neff and Annette Weiefenbach. University of California Press, Berkeley, 1949, $4.00.

In an effort to evaluate the importance of local business cycles and to determine their significance at the national level, this book investigates cycles in six industrial areas—Los Angeles, San Francisco, Chicago, Cleveland, Detroit, and Pittsburgh. Four series of basic data were used in the study: Bank debits, department store sales, industrial and commercial power sales, and industrial employment.

The Power of People

By Charles P. McCormick. Harper & Brothers, New York, 1949, $2.00.

Multiple Management was first put into effect seventeen years ago by McCormick & Company of Baltimore. In this book, the creator of the plan brings up to date the record of its accomplishments and further developments. Mr. McCormick shows specifically how employees on the sales force, in the office, and in the factory, share both the responsibilities and opportunities of company management.

Survey of Selected Personnel Practices in Los Angeles County as of April 1, 1949

Compiled by Robert D. Gray. Industrial Relations Section, California Institute of Technology, Pasadena, 1949, $2.50.

This study was undertaken for the general purpose of providing employers with information on such personnel practices as paid vacation and sick leave plans, benefit plans, physical examinations, medical facilities, and recognition for long service. A similar survey was made in 1948.

Wage Policy for Management

By Sumner D. Charm. Funk & Wagnalls Co., New York, 1949, $2.75.

This book discusses the various techniques which have been evolved to help solve wage determination problems—job analysis, job evaluation, incentive plans, merit rating, and bargaining. Particular emphasis is made on how to gain and maintain good human relations in the many problems that wage determination creates.

The Economics of Collective Bargaining

Edited by Charlotte Knight. Institute of Industrial Relations, University of California, Berkeley, 1950, $1.00.

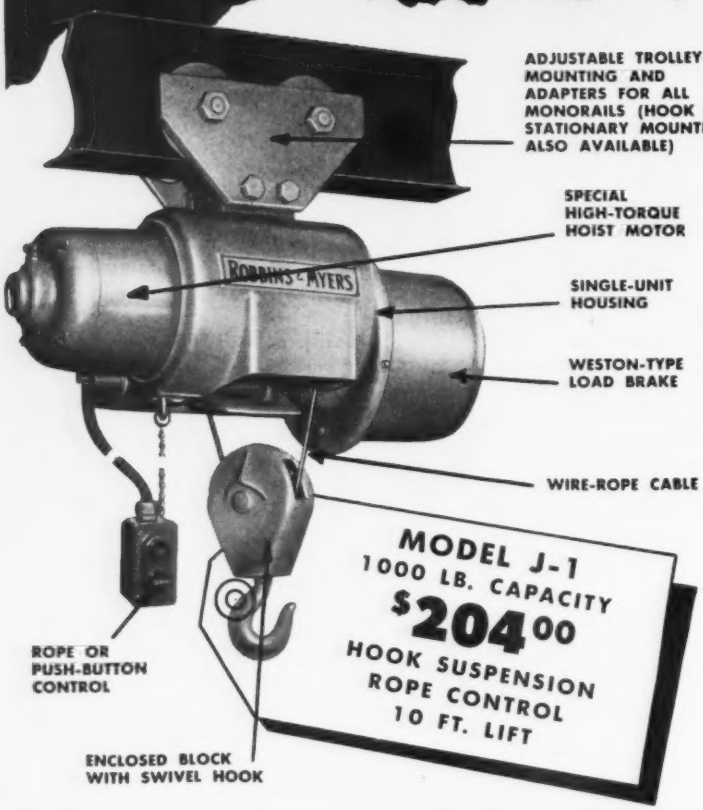
Each year it has been the practice of the University of California to sponsor a series of lectures on some aspect of industrial relations. This booklet contains the proceedings of lectures held during 1948 and 1949 in Berkeley and Los Angeles. The speakers include such men as Sumner Slichter, Walter P. Reuther, Edwin G. Nourse, William Green, and others.

Reviewed by:
BERNA M. CARLSON
College Librarian

NEW! LOW-PRICED!

ROBBINS & MYERS

Wire Rope ELECTRIC HOIST



You asked for a low-priced Robbins & Myers electric hoist . . . here it is! Quality-engineered and manufactured by the experienced men who make much heavier R & M hoists, this new "J" hoist will end a lot more costly, back-breaking lifting, give skilled labor more time to use their skills.

Lug, hook or trolley mounting . . . adaptable to 7 different beam sizes . . . the reliable "J" hoist is versatile, easy to operate. Little headroom is required. High-torque motor tailored to your exact needs. Push-button control for accurate spotting. Single-unit housing assures positive alignment. This hoist is ruggedly built; requires little maintenance. Sizes 1/4, 1/2 and 1 ton.

(WRITE FOR BULLETIN WI-451)

ROBBINS & MYERS • INC.

SPRINGFIELD 99, OHIO • BRANTFORD, ONTARIO

MOTORS • HOISTS • CRANES • FANS • MOYNO PUMPS

Self-Energizing Coal Mining Operation

EDNA Coal Company has a strip mine at Oak Creek, Colorado, 9,000 feet above sea level on top of a mountain. That mountain mine contains millions of tons of coal, a wonderful asset of natural resource, but it has to be transported to the valley before it can be sold.

Trucks could move it down the six-mile circuitous mountain road, but wear and tear on rolling equipment is prohibitively expensive.

So L. M. Cooley, of Edna Coal Co., devised a three-part conveyor belt to negotiate the 29% grade over a half-mile course, to the nearest rail head.

By so doing, he accomplished more than the immediate objective of coal transportation: when the conveyor belt operates, with a 30,000 pound pull on it, the electric motors which started it in operation become generators when their r.p.m. reach their rated speed.

Then they provide 100 kw. of electric power for the mining operation, carried out by electric-powered dragline on the mountain top. They also provide a drag on the belt (moving at a constant speed of 350 feet per minute).

At the unloading end of this conveyor, its cargo of coal is transferred into a tipple which cleans the coal, crushes it into smaller pieces, and sorts it to size.

Normally, production is about 250 tons per hour; as much as 750 tons per hour could be produced if need warranted.

Fresh Canned Milk Is Next On the List

Fresh milk in tin cans may be shipped on a commercial basis from the Puget Sound area to Alaska from a small pilot plant within the next six months, according to R. R. Graves, formerly with the U. S. Bureau of Dairy Industry. The milk is received by the consumer without ever being exposed to the air, and may be stored four months at 45 deg. Fahrenheit without deterioration.

Cows are milked by machine, the milk flowing directly into a 100-gallon portable vacuum tank and transported to the processing plant, where it is held at body temperature until just before homogenizing. Then it is raised to 110 deg. Pasteurizing is done at 275 deg. for 15 seconds, to reduce heating flavor. Twenty per cent cream is handled by the same process, but raw milk spoils.

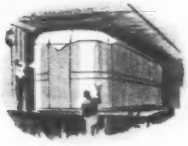
BEST TRAILER SERVICE IN THE WORLD!

80 FRUEHAUF BRANCHES coast-to-coast offer you Trailer maintenance and repair that is *fast* and *dependable!* Look for the Fruehauf Service sign—it's *the* sign of quality.

...Here Are 6 Big Reasons Why!

1 FULL FACILITIES — Superior facilities, factory-trained specialists and specialized equipment, available at all Fruehauf Branches, assure haulers of dependable, high-quality workmanship.

2 BODY REPAIR—Fruehauf repairs everything—from a dented panel to a complete wreck. Damaged Trailer or Truck Bodies — wood, stainless steel, any metal—are handled with the same dependable, time-saving efficiency.



3 PAINTING — Factory-trained painters, using special paint spray booths, give Trailers, Truck Bodies and buses a smooth, sparkling paint job . . . put on right, to *stay* on under the most extreme hauling conditions.

4 GENUINE PARTS—A complete line of genuine parts and accessories is stocked by every Fruehauf Branch. All parts are factory tested and approved to assure perfect fit, long life.

5 BRAKE REPAIR—"Brake Doctors," special machines to give you "factory rebuilt" brakes, are standard equipment in all Branches. This "factory rebuilding" assures smooth stops with the heaviest loads.

6 MACHINE SHOP FACILITIES—Fruehauf Branches maintain machine shops for fabrication of special parts to "factory specifications" — important where repair work requires individualized parts.

FRUEHAUF TRAILER COMPANY
Western Manufacturing Plant, Los Angeles

Sales and Service: Los Angeles • San Francisco • Portland • Seattle
San Diego • Fresno • Sacramento • Spokane • Billings • Salt Lake City
Boise • Phoenix • Albuquerque • El Paso • Denver

IT PAYS OFF *to have them Serviced by* **FRUEHAUF**

Is That Cable Strong Enough to Hold Without Breaking?

BREAKING strength vs. safe working load is explained by the Pacific Maritime Association. In a recent bulletin the following information is included:

The safety factor of a piece of gear is the ratio between the known load placed on it and its ultimate breaking strength. In the case of machinery and many other things, the safety factor is included in the rating. For example, a 50-hp. winch motor will deliver 50 hp. safely and can even be overloaded occasionally without danger.

A cargo boom rated at 5 tons can safely be used as a swinging boom to pick up a load of 5 tons and even more. The motor and the boom are both designed and constructed so that their breaking strength is greatly in excess of the strains which will be placed upon them when used to their rated capacity. At the same time both, particularly the motor, will last longer if it is not operated at maximum capacity all the time.

Gear such as rope, chain, wire, shackles, etc., are rated according to their breaking strength rather than their safe working load.

For example, a wire may be used to drag a car along a track. If it parts, no harm is done, and it can easily be replaced. On the other hand, the wire may be used in a passenger elevator where failure would endanger the lives of a number of people, and replacement would disrupt service for a considerable time.

Assume that in each case the expected working load was 5 tons. In the first case the safety factor might be 3.0, merely enough to withstand normal jerks without fatiguing the wire too quickly. In that case a wire might be selected with a strength of $5 \times 3 = 15$ tons or a $\frac{5}{8}$" improved plow steel wire rope.

In the case of elevators where safety is vital, the rope will be bent at high speed over several sheaves, and long life is important, the safety factor may be ten. In this case a rope, or ropes, with a total breaking strength of $5 \times 10 = 50$ tons would be selected.

Hence, rope and wire must be rated by their breaking strength and it is up to the purchaser to select the proper size using a factor of safety suitable for the type of work to be done. Unfortunately, many people confuse the safe working load of a boom, for example, with the breaking strength of a rope or chain and will say the boom is "good for" 5 tons (referring to its safe working load) and the wire is "good for" 25 tons (referring to its breaking strength) when actually, for the purpose intended, the load on the wire should be no greater than that on the boom.

Safety Advantages

The advantages gained by the use of reasonable factors of safety are the following:

1. Strains are generally below the fatigue point of the material.
2. The wear (on rope, wire and chain) is reduced.
3. Protection is provided against undetected defects.
4. There is sufficient strength so that inspection will disclose normal wear and the need for replacement before failure occurs.
5. There is sufficient strength to withstand the high but indeterminate shock loads which are placed on the gear by normal jerks.

You Can **SEE**
The Superiority of
A-F Engineering

YOU, TOO, can lower your costs by using an A-F Overhead Trolley Conveyor System similar to this one in a large electrical manufacturing company.

By keeping materials and products "up in the air," you save valuable floor space, eliminate aisle congestion, and assure a smooth-running, profit-making production system.

A-F Overhead Trolley Conveyor Systems are only one of the many types manufactured by Alvey-Ferguson. Backed by 49 years of experience, A-F Engineers are well qualified to show *you* how to cut costs and increase profits. Write for a discussion—today.

THE ALVEY-FERGUSON COMPANY

117 West 9th St., Dept. W.I.-2 Los Angeles 15, California

Main Office: Cincinnati 9, Ohio - Establisehd 1901

CONVEYING EQUIPMENT

Alvey-Ferguson

WASHING MACHINES FOR INDUSTRY

What to Do With a Load of Bananas

A HARMLESS little thing like a bunch of bananas doesn't present much of a problem until you start getting them in boatloads and have to move them about. Then, because of their perishable nature, great care must be exercised.

Individual stems must be selected to guarantee that they will be properly stowed in refrigerator cars. More important, each carload must reach its intended destination in first-class shape.

To insure a satisfactory delivery of carload lots, United Fruit Company maintains a staff at Berth 147, Wilmington, Calif., to supervise rail shipments. That staff issues proper instructions for pre-heating, pre-icing, re-icing, and ventilating, as required by climatic conditions.

To obtain a satisfactory layout of banana conveying machinery, individual conveyor units must be especially designed. They must carry the fruit from any portion of the ship's hold to any aisle of reefer cars on the wharf. They must accomplish that with a minimum of transfers or re-handling. And they must do it without causing scarring or bruising.

First step in discharging bananas from a ship's hold requires the use of four Gantry elevators of the boom-crane type. Incorporated is an integral endless chain conveyor composed of two parallel chains. Equally spaced transverse spreader bars support rubberized canvas pockets. Each pocket forms a suitable carrier for one stem of bananas.

These Gantry elevators lift the fruit from the ship's hold and deliver them to a belt conveyor system that is permanently installed on the wharf.

Each aisle belt runs longitudinally between two tracks of railroad cars. Thus, while one track of cars is being loaded, cars on the other track, previously loaded, may be replaced by empties. This system enables the ship discharging operations to continue uninterrupted for any time period required.

This mechanized installation has further merit, in that (1) it is not limited to handling bananas only, and (2) it can be worked in reverse, to load ships from railroad cars.

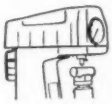
Refrigerator vessels of 2,000 tons capacity have been loaded by this unit in 15 to 20 hours less than with the conventional ship's cargo equipment.

Patented Palm-Grip Design Handles give a secure hand grip and better appearance.

32-tooth ratchet action—pawl always makes a double tooth contact for added strength.

Easily removed Welch plugs permit cleaning and servicing of friction grip device.

Four-way socket grip makes it easier and faster to interchange various units. Hot broached chip-curled openings give you smooth strong socket walls.



Snap-on metallurgists select only high grade alloy steel to produce Snap-on wrenches.

Controlled heat treating combines surface hardness with skin-to-core toughness in every part of every tool.

Snap-on "Supreme"

23-PC. MASTER SOCKET SET Many New Features Combined to Give Mechanics Most Value For Their Tool Dollars!

Snap-on scores again with a new "Master Supreme" set of four handles, three extensions, a universal joint, and fifteen popular sized sockets. In this ½" sq. drive set you will find highly engineered design, accurate balance, perfect fit, and a comfortable grip, that results in faster, safer, more satisfactory work. Every tool has a full chrome finish for long service life.

Check the features at the left, then ask the Snap-on man to show this set to you. Ask him to demonstrate — try the feel of the tools yourself. You'll agree that mechanics who use dependable tools like these will be a definite asset to your shop.

Over 4000 Snap-on tools are available through 41 direct factory branches located in key industrial areas.

*Snap-on is the trademark of Snap-on Tools Corporation

SNAP-ON TOOLS CORPORATION
8032-E-28TH AVENUE
KENOSHA, WISCONSIN

Hollywood and TV United by Economic Shotgun Marriage

A SIGNIFICANT westward migration of television producers, as recently predicted by *Western Industry*, apparently has begun. It may mean rejuvenation of the industry that made Hollywood world-famous, and it will also reinforce a trend that is making the West Coast the fastest-growing market for TV receivers in the country.

Hollywood movie makers have been trying to prove that television programs can be produced better and cheaper in Hollywood film factories than in Eastern advertising agency headquarters. Furthermore, they say the films can be shipped around the country and shown at an average cost far below even a network "live" show.

It took Jerry Fairbanks, producer of scientific and other short films, to put it over. He persuaded International Silver to let him film one TV production in Hollywood, using studio techniques that have been saving millions for movie moguls during past decades. So satisfactory were the results that an entire 13-week series was immediately scheduled for "canning" in Hollywood—and the rush was on.

It takes little to create a new sensation in volatile TV circles, where miraculous new developments are expected from hour to hour. Now the bandwagon's rolling, other TV shows are being film-auditioned, and ad agency men are sharpening their pencils for new cost-saving angles to take full advantage of cinema technical wizardry.

It's doubtful whether TV needs Hollywood any worse than Hollywood needs TV. Bank of America has reluctantly moved to foreclose mortgages running into the hundreds of thousands of dollars on several well-known films, including "Casbah," which was sold at auction for $5,000 when the maker was unable to pay off a $350,000 mortgage on it.

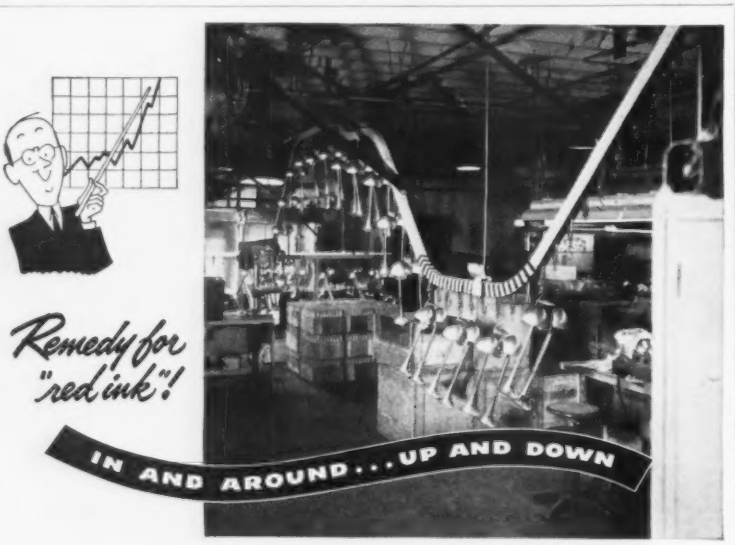
And pointing to surveys showing how TV owners are staying home from the movies in droves, Cmdr. E. F. MacDonald, Jr., president of Zenith Radio, told local cinema executives that television was cutting into box office receipts so drastically that there was only one solution—"Move the box office into the living room!"

MacDonald's plan is to scramble TV programs electrically, pipe them into homes via telephone, and unscramble them by a device attached to the television set. At month's end, the family pays for its entertainment via an extra dollar or so added to its telephone bill.

Further hint that the shotgun marriage of TV and the movie industry may soon be consummated is Technicolor's purchase of the amazing Geer electronic tube, said to convert present TV sets inexpensively to receive any type of color or black-and-white picture.

Meanwhile, Los Angeles has jumped into second place nationally as a TV market, leading Chicago by 10,000 users at last count and still pushing ahead. TV shipments into this city in 1949 numbered 196,941. It already holds first place in the number of local TV ad accounts—173, versus 75 for Philadelphia, 66 for Columbus. Now if national network production shifts westward, Hollywood may soon take what it considers its rightful place as television capital of the world.

Western power men may well keep

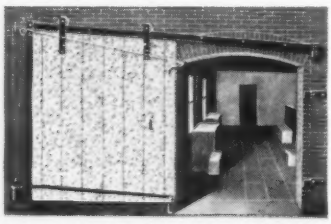


R-W "ZIG-ZAG" continuous power conveyors raise productivity . . . lower costs

In almost every imaginable industry, R-W Zig-Zag Conveyors are serving production and processing lines—increasing efficiency, cutting costs. Specifically designed to carry light loads through confined, crowded areas, Zig-Zag breaks costly "bottle-necks," and helps put production on a more profitable basis.

"ZIG-ZAG" Pays for Itself

Our files are filled with evidence which proves conclusively that the savings effected with R-W Zig-Zag Conveyors are so substantial the equipment quickly pays for itself—in most cases in *less than a year!* So, to put your plant in position for peak profits, convert now to Zig-Zag—the modern method for continuous overhead transportation and processing of materials. For complete details—all the facts about R-W Zig-Zag Conveyors, contact the nearest office of Richards-Wilcox.



R-W No. 2102 Hardware with No. 647 labeled "FyaR-Ward" flat surface steel door.

R-W OFFERS COMPLETE LINE OF FIRE DOORS AND AUTOMATIC FIRE DOOR HARDWARE . . . the most comprehensive line of fire door hardware, fire doors and fusible links on the market.

1880 RICHARDS WILCOX R-W AURORA 1950
Reg. U. S. Pat. Off.
OVER 70 YEARS

Richards-Wilcox Mfg. Co.
"A HANGER FOR ANY DOOR THAT SLIDES"
AURORA, ILLINOIS, U.S.A. *Branches in all principal cities*
SLIDING DOOR HANGERS & TRACK • FIRE DOORS & FIXTURES • GARAGE DOORS & EQUIPMENT
INDUSTRIAL CONVEYORS & CRANES • SCHOOL WARDROBES & PARTITIONS
ELEVATOR DOOR OPERATING EQUIPMENT

an eye on TV as promoter of home electrical consumption. Average U. S. residential load now is 1,600 kw. hours per year, but surveys indicate the average TV set will use about 225 kw. hrs. Thus every seven new receivers will add a power load approximately equal to one new home.

A good many other industries may be feeling competition from television. Furniture makers, of course, are doubly hit because (1) many families are using all their cash to make the down payment on a new home, leaving its furnishing until later, and (2) TV purchases, plus auto installment contracts, are skimming the cream of consumer buying power.

Caltech Conference Scheduled for July

Five intensive, full-time conferences on specialized aspects of personnel administration and industrial relations will be conducted next July by the Industrial Relations Section, California Institute of Technology in Pasadena, California.

The conferences scheduled are:

July 9 to 14—Re-examining a Pension Program.
July 9 to 14—Wage and Salary Administration.
July 16 to 21—Managerial Development.
July 16 to 21—Re-examining Insurance and Other Benefit Programs (other than pensions).
July 23 to 28—Communication Between Management and Employees.

Each conference is designed for executives responsible for the development and administration of the program to be discussed. Attendance is limited in order to permit full discussion and exchange of experiences.

The conference leaders include:

Lee Laird, Manager, Benefits Division, Standard Oil Company of California.
Russell L. Moberly, Director, Industrial Management Institutes, University of Wisconsin.
Paul Pigors, Associate Professor of Industrial Relations, Massachusetts Institute of Technology.
John W. Riegel, Director, Bureau of Industrial Relations, University of Michigan.
Leo Wolman, Professor of Economics, Columbia University; Member, Research Staff, National Bureau of Economic Research.
Robert D. Gray, Director, Industrial Relations Section, California Institute of Technology.

Living quarters and meals for each conferee will be provided on the campus. Further details can be secured from: Industrial Relations Section, California Institute of Technology, Pasadena 4, California.

How to Cut Maintenance Costs 3 Ways!

GULF OIL CORP.
Port Arthur, Texas
Applier:
NOACK BROTHERS
Port Arthur, Texas

PROTECT STACK SURFACES... Subjected to every climatic change, plus extreme conditions of vibration and high temperatures, stacks are a frequent and continuing source of maintenance expense. That is until they are protected by a tough, long-lasting coating of Arco Stack Dum Dum. Then they shrug off weather and other maintenance-provoking conditions because Stack Dum Dum's elastic coating permits ample expansion and contraction to withstand heat, cold and vibration.

PROTECT BUILDING SURFACES... Where cracks appear in concrete, stucco or other masonry building surfaces, it's time to apply a thick, tough but elastic coating of Dum Dum Masonoc. This time-proved Arco product seals cracks, stops moisture seepage and prevents the need for much costly reconstruction.

PROTECT METAL SURFACES... Dum Dum for Metal protects any metal surface against the hazards of rust, corrosion, weather wear... even industrial fumes and gases.

FOR COMPLETE INFORMATION ON ALL 3 PRODUCTS—MAIL THIS COUPON TODAY

THE ARCO COMPANY OF CALIFORNIA, LTD.
Dept. WI-5, 745 East 59th Street, Los Angeles 1, California

☐ Please send booklets describing Stack Dum Dum, Dum Dum Masonoc, Dum Dum for Metal.
☐ Please supply names of appliers operating in this locality.
☐ Please have sales representative call.

Name.....
Adress.....
City..... Zone..... State.....

SPECIFY ARCO
THE ARCO COMPANY
CLEVELAND • LOS ANGELES

Two Developments In Pollution From Pulp Mills

TWO recent developments in the disposal problem of sulphite liquors from pulp and paper mills are reported, one from Weyerhaeuser, the other from Oregon State College.

Weyerhaeuser's answer to the demand of the Washington State Pollution Control Commission that it stop discharging waste liquors into Port Gardiner Bay from the Everett sulphite mill, is to draw plans for installing there the magnesium oxide process developed at Weyerhaeuser's Longview plant.

Before the MgO process can be installed at Everett, the serious problem of what to do about salt must be solved, for the Everett mill uses salt water borne wood, while Longview does not. After that there will be a lengthy construction period, for the Longview job took two and one-half years.

In the MgO process, the waste liquor is put through evaporators to remove excess water until the organic solids comprise 50 per cent of the liquor. Then the liquor is burned under a boiler.

Combustion causes the lignin and carbohydrates in the liquor to produce heat. The other chemicals are transformed into magnesium oxide and sulphur dioxide.

The magnesium oxide is collected from the furnace gases, mixed with water, and pumped through absorption towers. Approximately 80 per cent of the magnesium oxide is recovered in this process and can be re-used.

Combustion gases containing the sulphur dioxide are piped to the same absorption towers where they come in contact with the magnesium oxide. The chemical combination produced is the same cooking acid used in making sulphite pulp in the beginning.

At Oregon State College a pilot plant has been started for heating the sulphite liquor under pressure for short periods, to cause it to lose from 60% to 90% of its ability to cause harmful stream pollution. Dean George W. Gleeson explains that pollution strength of any waste in a stream is measured by its biochemical oxygen demand—BOD—or in other words, the amount of oxygen taken from the water.

The method developed reduced this BOD by more than 60 per cent when the sulphite liquor was heated for short periods at 350 to 450 degrees Fahrenheit under normal and induced air pressures.

At higher pressures chemical decomposition occurred with the precipitation of residues that could be burned. BOD reduction was then as high as 90 per cent.

An aquatic biology project also is being conducted to determine the effect of kraft mill waste components on salmon, trout and other common species of fish.

New Fringe Benefits Plan

Negotiations are under way in Southern California with the AFL Furniture Workers Union concerning a new plan embodying life insurance with health and surgical benefits for employees and their dependents.

No employee contribution is involved, the cost to employers thus amounting to several cents per man-hour.

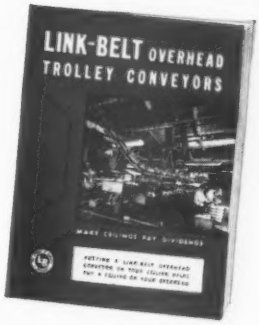
Plants where CIO is involved have been operating under another type of benefit plan for some time and will not arrive at renewal of contracts until October.

ODD SHAPES
hold no terrors . .
for Martin Wirebound
containers
Finished products that feature uneven profiles—projecting parts that demand protection and seem to defy orderly, compact stacking—require masterful design in a shipping container. As a part of their daily work, Martin Container Engineers accomplish phenomenons . . . also lesser miracles! You should see the variety of things for which they volume-produce an economical shipping container.
For your own satisfaction, invite a Martinman to discuss your container problem. Letter or postcard starts us on our way.
Container perfection means Product protection
PLANTS & OFFICES: Whittier, Calif.; San Jose, Calif.; Oakland, Oregon; Seattle, Wash.; Toledo, Ohio.
the MARTIN BROTHERS Box Co.
11655 EAST WASHINGTON BLVD.
WHITTIER, CALIFORNIA

Speed Handling, Cut L/D in Freight Handling with LINK-BELT TRUCK-TOW CONVEYOR

Truck-Tow System Pays Substantial Dividends

Freight terminals using the Link-Belt Truck-Tow Conveyor system for handling LCL shipments report several major advantages. Sharp reductions in damage to goods, a decided speeding up of operation, reduction in congestion and confusion, and a reduction in handling costs are included in the benefits experienced at a number of prominent freight docks throughout the country. Illustrated is a Link-Belt Truck-Tow Conveyor in a closed circuit 2030 feet long. (Lengths to suit your dock.) Platform trucks are attached at 15 foot intervals, and make the entire circuit of the terminal in 19 minutes. Trucks move in one direction only, eliminating blockades or congestion. Speeds selected allow trucks to be attached or detached from moving chain with perfect safety.



To find out how your handling operations can be made faster, safer, lower in cost, send for Book No. 2330. Numerous examples of freight and package handling installations are shown.

LINK-BELT COMPANY

PACIFIC DIVISION

Plants and Factory Branch Stores at San Francisco 24, Los Angeles 33, Seattle 4.
Offices and Factory Branch Stores at Portland 9, Spokane 13, Oakland 7.

11.887-P

• One way to unload a truck in a hurry. Instead of buying a special truck body to do this job (transporting a dry, runny substance), Lindeman Bros. had this "tipple" made.

Hoistable Platform for Bulk Unloading From Trailer Units

A TRUCKING problem arose in Stockton, California, a few weeks ago where a bulk commodity was to be transported in large tonnage. Lindeman Bros., bidders for the transportation, checked into the situation thoroughly and immediately arrived at two conclusions:

(1) In order to make a profit on the venture, they would have to devise some means of handling that tonnage on standard highway equipment rather than on specially designed truck bodies usable for only that commodity;

(2) They had to devise a means of fast unloading, also with presently-owned equipment.

First part of this problem was conquered by designing truck bodies to fit on their standard flat rack equipment, and to hold ammonium sulphate, a very "runny" but dry substance.

But the second phase was not so easily accomplished, with cost as a prime factor. Lindeman Bros. discussed their problem with Guntert & Zimmerman, an engineering and manufacturing firm of Stockton.

A design engineer took careful measurements of the trucks and of the movable hopper into which the bulk material had to flow in a controlled manner.

Result of this planning is a hoistable platform, shown here, called a "tipple."

This is how it works:

Semi-trailers are backed up a ramp and onto the platform between white lines (painted on both sides) located about ten inches wider than the tread. It is not necessary to place the trailer in exact center. The pull trailer of a

New Bulletin

PRESENTS NOPAK "SERIES 1500" HIGH PRESSURE HYDRAULIC CYLINDERS

Designed for heavy duty service at high pressures, the New 1500 Series embodies features which contribute to long-range dependability and trouble-free operation. Included are: Positively Locked Piston Assembly, Tubing Flanges secured by Lock-Rings, Compensating Rod Wipers, "O"-Ring Static Seals between heads and tubing. Available in 5 standard mountings, with or without Adjustable Cushioning.

Ready FOR You!

WRITE FOR NOPAK BULLETIN HC-1

GALLAND-HENNING MFG. CO.
2749 S. 31ST STREET, MILWAUKEE 15, WIS.

NOPAK
VALVES AND CYLINDERS
DESIGNED for AIR and HYDRAULIC SERVICE

•
Representatives in Principal Cities

A 5741-½H-AA

set of "doubles" is pushed into place by a shuttle tractor with a front end trailer hitch.

By thus spotting the trailer, a great deal of time is saved. Generally there are no stops or re-lineups with either trailer. The shuttle tractor is equipped with front end air lines so brakes are always connected in both means of getting equipment on the "tipple."

Lindeman Bros.' FWD tractor with a heavy winch attachment is backed up against the far side of the "A" frame to give added stability to the unit. Lines are connected, and when the truck winch starts to operate, the "tipple" begins to rise on one end.

Trailers can be tilted to about a 45° angle. That enables almost any material to slide off the wooden trailer floor. A fast reversing mechanism is used in order to control a surge of the bulk material in case of bridging, or hanging. This feature is necessary because the receiving hopper is not large enough to take the entire truckload at once.

Unloading time for a set of doubles is about 22 minutes. If the hopper were larger (12-ton capacity) unloading could be accomplished in about 11 minutes. That time includes unloading and re-hooking up the doubles ready to roll. Ample space is provided for maneuvering alongside the tipple.

World's Largest Glue Factory

SEVEN hundred tons of glue per month is a pretty sticky mass. That's the amount of the stuff produced by Monsanto Chemical Co. in their new $1,250,000 plant (the world's largest) in Seattle.

How they do it is tribute to materials handling engineering. A pneumatic car unloader fills big bins with soya bean meal which arrives in box cars. This meal is about 80-100 mesh (coarse flour) and is the high protein residue left after the oil has been extracted.

A daily-use bin supplies a steady flow of this material to five hammer mills that reduce it to 200 mesh.

Gyratory sifters pass the material through silk screens so that the flour is uniform in size, after which it goes to a pre-mixer, with sodium salts and other chemicals weighed in automatically by other preparation machinery.

Finished dry glue goes into hoppers that release it into 100-pound bags. Two bags can be filled each minute.

Nearing completion, at a cost of $100,000, is the most modern equipment for production of new synthetic resins.

TIME..
WORK..
MONEY Saved With

CONSTANT DUTY

APPLETON REELITE

TRADE MARK

Prevents Kinks, Tangles, Breaks In Conductor Cable

Moving electrical machinery operates smoothly and economically when power is supplied through Appleton Constant Duty Reelites. These sturdy, precision-built reels automatically take up and pay out conductor cable.

Operating on spring tension, Appleton Constant Duty Reelites hold cable gently taut, preventing breaks, kinks and tangles. Accidents are prevented, costly delays are avoided, work is speeded—cable costs are held to an absolute minimum.

To assure years of trouble-free service, springs of Reelites are enclosed in dust-tight, grease-filled compartments. Ball-bearings guard against wear, provide smooth, efficient operation.

Appleton Constant Duty Reelites are at work everywhere in industry—on hoists, lifting magnets, cranes, chargers, motor generator sets—an endless variety of machinery requiring flexible power supply. Thousands have profited through the use of Appleton Constant Duty Reelites. Why don't you?

Send for 50-Page Bulletin No. 504, giving complete details on Appleton Constant Duty Reelites, Portable Reelites, and Reelites especially built for air and fluid lines. Or see Sweet's File, page 2a/10a.

APPLETON ELECTRIC PRODUCTS — REG. U.S. PAT. OFF.

Sold Through Electrical Wholesalers

APPLETON ELECTRIC COMPANY
1740 WELLINGTON AVE. • CHICAGO 13, ILL.

Branch Offices and Resident Representatives in all Principal Markets

APPLETON

CONDUIT FITTINGS • LIGHTING EQUIPMENT • OUTLET AND SWITCH BOXES
EXPLOSION-PROOF FITTINGS • REELITES

THE WEST ON ITS WAY

ALASKA

MULTI-MILLION DOLLAR PLANT—Reports are current that land has been purchased by the Aluminum Corporation of America in connection with proposed construction of a multi-million-dollar plant and offices to be built in the Dyea area, with administrative offices at Skagway.

ARIZONA

$250,000 CAPITOL EXPANSION—Construction is under way by Capitol Foundry Company, Phoenix, of two new steel buildings to house a steel forging plant costing between $200,000 and $250,000, which will be in operation by May 1.

NEW MINERAL DISCOVERED—Discovery of a new mineral by E. B. Daggett has been made. It was found near the 760-foot level in the Mammoth mine at Tiger. The mineral is a complex lead sulphate and has been named Wherryite.

ELECTRIC GENERATING PLANTS SOLD—Southwest Lumber Mills, Inc. sells two electric power generating plants at Flagstaff and McNary to Central Arizona Light and Power Company, for a reported $1,250,000. Calapco plans to spend approximately $200,000 in improvements to both plants.

$1,500,000 EXPANSION BY EDISON—Arizona Edison Company plans to spend $1,500,000 in expansion of facilities, $200,000 of which will be for a generating plant at Miami with a capacity of 1,235 kilowatts. Other projects included in the expansion will be three new substations in the Salt River Valley, one on the Yuma mesa, one at Casa Grande and two at Maricopa; a water storage tank at Coolidge, a new well at Superior, a transmission line from Maricopa to Sexton, and a natural gas distribution system at Bowie.

PHOENIX SEEKS ADDITIONAL NATURAL GAS—El Paso Natural Gas Company files application with the Federal Power Commission for authority to construct approximately 34 miles of pipeline and metering and regulating facilities to increase the amount of natural gas for Phoenix by 35,000,000 cubic feet per day, the gas to be obtained from residue or flare gas in the Permian Basin.

CALIFORNIA

PACIFIC PORTLAND CEMENT COMPANY advises that their new plant at Redwood City will not include a wallboard plant as mistakenly reported in the April issue of *Western Industry*.

$75,000 FIRE LOSS—A loss exceeding $75,000 was estimated by Shell Oil Company when fire at their Brea Canyon absorption plant went up in flames.

MANUFACTURING FIRM FORMED—Alert Supply Company, 6718 McKinley Avenue, Los Angeles 1, forms for the purpose of manufacturing a complete line of buffing and polishing compositions. Representing also, in association with W. Cahill, The Jackson Buff Corporation and The Packer Machine Company.

MULTI-MILLION-DOLLAR PROGRAM FOR STANDARD—Standard Oil Company announces a multi-million-dollar program designed to relieve a growing over-production of heavy fuel oil in California. The new program involves: (1) Conversion of Stand-

Cranes - Hoists - Monorails

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THE WEST ON ITS WAY

ard's giant TCC unit at Richmond to a new refining process; (2) Construction at Richmond of a new vacuum tower capable of handling 50,000 barrels of oil daily; and (3) Integration of many existing plants into the new processing program. Engineering work already has begun on the TCC plant conversion, and the whole project is scheduled for completion by mid-1951.

PITTSBURG PLANT FOR KROEHLER—Kroehler Manufacturing Company, makers of upholstered furniture, buys building in Pittsburg from the Farm Corp. of East Providence, R. I. for new plant site. It will have 47,500 square feet of floor space. It is expected 100 persons will be employed at the new plant.

PASTUSHIN INDUSTRIES EXPAND—Construction is nearing completion on a 12,000 sq. ft. addition to its main plant at Los Angeles by Vic Pastushin Industries, Inc. The new building will be devoted to assembly on the firm's production orders for military aircraft components.

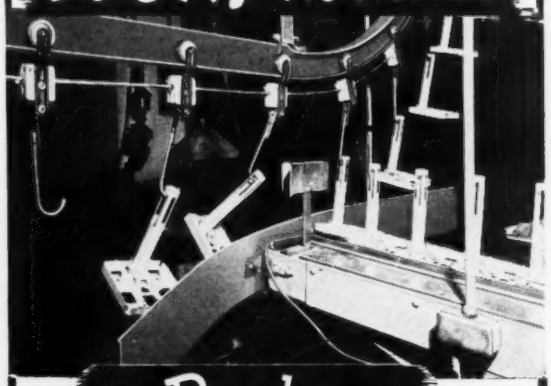
$400,000 ADDITION FOR MODESTO PLANT—Modesto Refrigerating Co. breaks ground for new $400,000 addition that will increase capacity 25%. Completion is scheduled by July 1st and will represent an investment of more than $2,000,000.

PACIFIC IRON PRODUCTS MOVE—Pacific Iron Products, manufacturers of modern iron furniture, moves its office and plant to 1150 East Pico, Los Angeles. The move was made to consolidate all of Pacific Iron's operations under one roof.

10,000 JOBS FOR INDUSTRIAL WORKERS—Industrial development in Los Angeles County during 1949 created nearly 10,000 jobs for industrial workers in that area. About 650 new jobs resulted from manufacturing developments during November 1949 as 21 industries announced new plants and 27 others put expansion programs into effect for private capital investments of $4,489,000.

ADMINISTRATIVE OFFICES MOVE—Hunt Foods, Los Angeles move administrative offices to Hayward as soon as construction is completed on a 3-story building on "A" Street. Personnel not moved with the headquarters will be replaced locally.

LOOK! No Hands



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In this application the production parts are picked up automatically from sub assembly by main cable conveyor.

In plants of every size, in every industry, handling costs can be cut 'way down. Users report savings up to 30%. Get the facts on this smooth-running, trouble-free conveyor for light and medium loads. Buschman Representatives in principal cities. Write for Bulletin 41.

Buschman Conveyors

Keville Industrial Service, Pomona, Calif. Phone: Lycoming 2-3977 — Power Conveyors

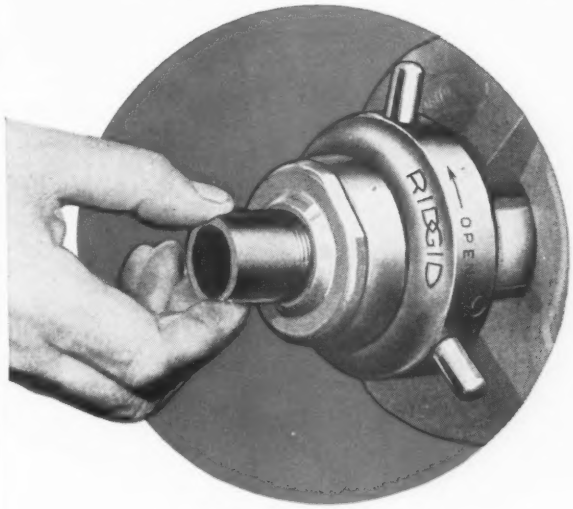
George M. Prescott Company, Los Angeles, Calif. Phone: Adams 3-3247 — Portable Conveyors

Gamble-Hawkins Co., Phone Beacon 0331, Portland, Ore.

Murry Jacobs Co., Phone: Eliot 2655, Seattle, Wash.

Roll-Rite Corp., Phone: Glencourt 1-5921, Oakland, Calif.

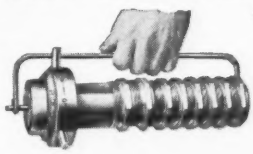
Extra-Easy Threading OF SHORT NIPPLES



"This RIDGID nipple chuck sure cuts the monkey-business out of threading short nipples."

New RIDGID Nipple Chuck fits any threading machine, power drive or vise

● Typical RIDGID worksaver advantages in this new nipple chuck—to speed every short nipple threading job! Fits any threading machine, power drive or vise—no special tools, parts or adjustments. No adjusting or changing of stop plug—it's an integral part of nipple chuck—automatically in position for use. Threading nipple is released instantly by turn of nipple chuck—easily unscrewed by hand. Pipe adaptors for ¼" to 1½", chuck takes 2" pipe. Ask for this new efficient nipple chuck at your Supply House.



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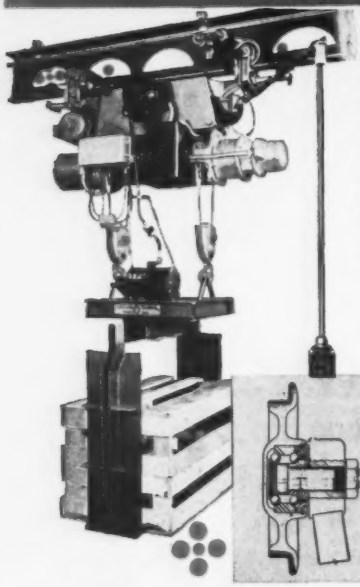

Over 30,000 installations . . . handling nearly every conceivable type of material in practically every industry—that's the agressive materials handling record behind Cleveland Tramrail systems.

Aetna double race type wheel bearing No. A-827 as used in Cleveland Tramrail Systems.

Included among their sturdy components are hard working wheel bearings to meet the high load capacity, precision smoothness and long, trouble-free performance required in this application—bearings which Aetna has proudly supplied for over 14 years.

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THE WEST ON ITS WAY

MERGER ANNOUNCED—Stephen Swiatek, former sales and advertising manager for Diamond Machine Tool Company, Los geles, and Walter Grabes, former owner of Grabes Machinery Company, merge into partnership as suppliers in heavy industrial machinery specializing in sales of sheet metal working machinery. The name of the new company is American Machinery Company, located at 3134 E. Olympic Boulevard, Los Angeles.

WELDING COMPANY FORMED—Merger of their operations to form Complete Casting Repair Co. is announced by R. C. Cadwell and B. F. Peterson, with headquarters as 10920 Alameda Street, Los Angeles. The newly formed company will specialize in the Autolock cold process and low temperature bronze welding.

NEW HEADQUARTERS FOR HATHAWAY PRODUCTS—Hathaway Allied Products Co. moves into new headquarters at 2024 Westgate Avenue, Los Angeles, where it doubles its production capacity. The firm manufactures crude botanical drugs and gums and acts as manufacturers' agent for textile dyes and chemicals of the Carbic Color & Chemical Co.

WOMEN'S SPORTSWEAR FACTORY NEAR CAMPO—Fifty workers will be employed by E. W. Roberts, owner of two clothing factories in the Los Angeles area, when operations begin at the new women's sportswear factory at the former Mitchell Hospital near Campo.

OPERATIONS MOVE—Kahl Scientific Instrument Company announces all its operations will be carried on in the future at Gillespie Field where it has been operating the past two years. Equipment from New York is being transferred. Employment depends upon contracts now being negotiated and will range from 20 to 100 persons.

TEETHING RINGS PRODUCED—Refrigerated teething rings are being produced by a new manufacturing company in the La Mesa industrial district headed by Marshall Newmark, the inventor. The gadgets are designed with a plastic container for distilled water, which can be chilled, and have a plastic handle attached to the container.

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Simply tell us: 1. Weight of your maximum load. 2. Dimensions of platform required. 3. Type and height of your lift truck. 4. Materials to be handled. 5. Any special features desired.

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MILLION DOLLAR CORP. IN OAKLAND—Western States Industries, Inc., forms in Oakland to provide risk capital and management counsel for small business, headed by Donald W. Henderson, as president of the new company. The charter of Western States Industries, Inc., covers almost every field of business, including finance, management, purchase of businesses and assets, and aiding and assisting business in its various problems, and will have its headquarters at 364 14th Street in Oakland.

ANOTHER PLANT GONE ARKIE—E. A. Vermere Co., Los Angeles, transfers its $250,000 aluminum die casting plant to Hot Springs, Arkansas, effective June 1st.

MODERN PACKAGING MART BURNS—The Modern Packaging Mart, 3540 E. 26th Street, Vernon, California, burns at an estimated $500,000 loss.

EAGLE OIL ACQUIRES CONTROL—Eagle Oil & Refining Company, Los Angeles, acquires control of Sunset Oil Company. J. D. Sterling, Eagle's president, elected president of Sunset.

WEST COAST JET ENGINE CENTER—San Bernardino Air Force Base establishes a West Coast jet engine overhaul center. Jet engine cells will be installed and conversion from the existing engine building at the base to a jet engine facility will be made.

BERKELEY PLANT EXPANSION—Plans under way by Shand & Jurs for enlarging their Berkeley plant call for a 2½-story building adjoining their present location at 917 Carlton Street.

COLORADO

PERLITE FIRM GOING OUT OF BUSINESS—Alexander Film Co., perlite division, goes out of the perlite business and is offering the perlite assets of the AleXitE Engineering Division for sale. Pur-

for Better Belt Joints
To keep belts in service longer, use only GENUINE Clipper Belt Hooks applied with Clipper Belt Lacers.
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Clipper Hooks are made of the finest quality wire—BETTER than ever before—produced for our exclusive use. Hooks hold with firm, sure grip—give longer satisfactory service.
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The Clipper No. 9 Portable Lacer laces belts up to 6 inches wide in one quick, easy operation. Under powerful pressure hook legs are embedded flush with the surface of the belt and points clinched, making a perfect joint. Phone your mill supply jobber for a demonstration!
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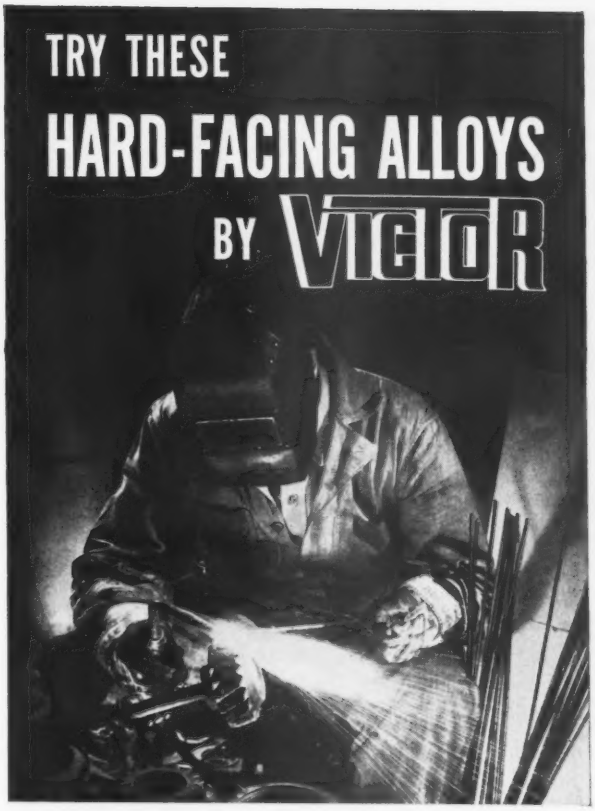

Made to *stretch working life* of cutting, drilling, and crushing equipment wherever *abrasion, impact, corrosion* and *heat* are encountered.

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	FOR THESE CONDITIONS	FOR SUCH EQUIPMENT
VICTORALLOY	Abrasion and severe impact	Tractor rollers, dredge pump impellers, bucket lips and teeth, rock crushers, steel mill wobblers
VICTORTUBE	Severe abrasion	Scarifier teeth, dredge cutter blades, posthole augers, oil field tools, ditcher teeth
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VICTOR TUNGSMOOTH	Thin cutting edges	Coal cutter bits, brick augers, pug-mill knives, screw conveyors

Available in a full range of sizes for both acetylene and electric AC and DC application. Try VICTOR hard-facing rods on your own job NOW. Save money two ways: (a) in time . . . application is faster and smoother; and (b) by stretching the life of equipment used under severe operating conditions. Order a supply from your dealer TODAY.

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Here are four instruments widely used by industry for a large variety of measuring needs . . . highly valued for their accuracy, dependability, and convenience . . . backed by Meriam's 37 years' specialization in the field of measurement.

U-Type Absolute Pressure Gauge

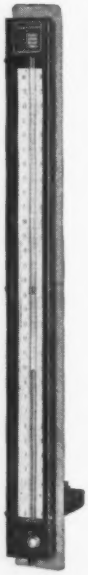
For the measurement of *absolute pressures* from one millimeter of mercury to the equivalent atmospheric pressure. Of simple design—accurate and dependable. Gauge head fastens to body by a single wing nut. Available in wall or flush front mounting styles. Ask for catalog sheet C-1142 WM.

Clean-Out U-Type Manometer
(Model B-1169 WM)

Semi-steel clean-out head is removable from body frame for filling and cleaning U-tube. For line pressures up to 100 lbs. per sq. in. Large bore "pyrex" tubing 1/16" inside diameter gives flat indicating fluid meniscus. Bold ½" high scale numerals provide for distant reading. Ask for catalog sheet B-1169 WM.

Well Type Manometer
(Table Mounting)

For portable service in the field, production testing, or in the laboratory. Glass tubing is gland packed at each end block and is supported at spaced intervals to prevent tube distortion. Also available for wall mounting, pipe mounting, and flush front panel mounting. Ask for catalog sheet A-203 TM.



Well Type Manometer
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The instrument body channel, scale, and indicating tube mount to the front of the panel; instrument well mounts behind panel. Connections are made behind the mounting panel. Provides an accurate, quick, and direct method of measurement. Ask for catalog sheet A-324 FB.

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chase had been made of a suitable building on the trackage of two railroads in Florence, and machinery ordered to process furnace-ready ore at the rate of about 50 tons per hour. Also a new modern type expander to turn out PerAleX aggregate.

$100,000 PROCESSING MILL—A large deposit of precious manganese will be developed in the Westcliffe area of Custer county. Adams Drilling Company of Brush, Colorado, plans to build a $100,000 processing mill in the area.

SADDLE MAKING FIRM SOLD—Denver Dry Goods Co. of Colorado sells the 86-year-old Hermann H. Heiser Saddlery Co. to Keyston Bros. of San Francisco for more than $200,000. The Denver firm will continue to operate under the Heiser name. Paul E. Owens, in charge of Keyston's leather goods manufacturing, becomes general manager of the Heiser Company.

PACKING PLANT EXPANSION STUDIED—National Tea Company, who operate a Denver slaughter house plant, are considering expansion of their facilities. The present site has been remodeled twice and an additional lamb killing floor is under discussion, as well as other improvements.

IDAHO

$250,000 ASPHALT BLENDING PLANT—Construction begins on a new $250,000 asphalt blending plant at the Salt Lake refinery of Utah Oil Refining Co. Comprising the new unit will be fifteen new tanks, pumping, mixing and loading facilities, which will be used in highway construction repair.

AEC AUTHORIZES PURCHASE—The U. S. Atomic Energy Commission authorizes the U. S. Army, Corps of Engineers, to negotiate purchase of privately-owned lands and land owned by the State of Idaho within the limits of the Commission's Reactor Test-

field tests show

18 TIMES THE WEAR

SURETY'S NEW SURESEAL PK GLOVES
(with GRIPTITE FINISH)

In tough, on-the-job tests, Sureseal PK Gloves with Griptite Finish wore 18 times as long, handled 18 times as many parts, as good hot mill gloves with ¼-inch thick wrappings of friction tape. And that kind of wear means LOW glove costs.

Sureseal PK Coating is super-resistant to chemicals, won't crack or peel. Surety's exclusive Griptite Finish grips effectively, wet or dry, oily or not—won't scratch metal, lasts as long as the gloves. Band top or knit wrist types available, with or without ventilated back.

Write for sample (on your business letterhead, please, specifying job involved).

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THE SURETY RUBBER CO.

THE WEST ON ITS WAY

ing Station, to be used for technical purposes. None will be allocated for use as sites for dwellings or business establishments.

UTOCO'S EXPANSION PROGRAM UNDER WAY—Completion is expected by midsummer of the first portion of Utah Oil Refining Co.'s 1950 expansion program which is the $350,000 oil products terminal at Burley, Idaho. Another terminal, of similar size and cost, will be installed at Boise, both of which terminals will increase the storage facilities and provide loading docks for Utoco's Idaho territory.

MONTANA

$28,000,000 PROGRAM FOR MONTANA POWER—Montana Power Company begins two major development projects to cost approximately $28 million, a steam-electric generating plant at Billings to be completed by August 1951, and an 83-mile natural gas line connecting Butte and Bozeman to be finished during the winter of 1950-51.

NEW CONTRACT AWARD—Award has been made to Conyes-Bechtel Corporation for the new 340-mile 12¾-inch natural gas pipe line for Montana-Dakota Utilities Co. The pipeline will run from the Worland field north of Casper, Wyoming, to near Baker, Montana, and will have a 35 million cubic foot daily capacity. Also included in the contract is a 3,200-hp. compressor plant.

IDEAL CEMENT CO. TO SPEND $3,500,000—The Ideal Cement Co. announce plans to spend $3,500,000 to raise the capacity of its Trident plant. Work begins immediately and will involve expenditure of $1,000,000 for additional grinding facilities.

PEA CANNING PLANT MAY OPERATE—Negotiations are under way at headquarters of the Pictsweet Co. in Mount Vernon, Washington, toward operation of the Bozeman branch canning plant this summer, idle last year. The current move to acquire the plant is understood to be a group from western Montana.

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Write for literature on the models in which you are interested.

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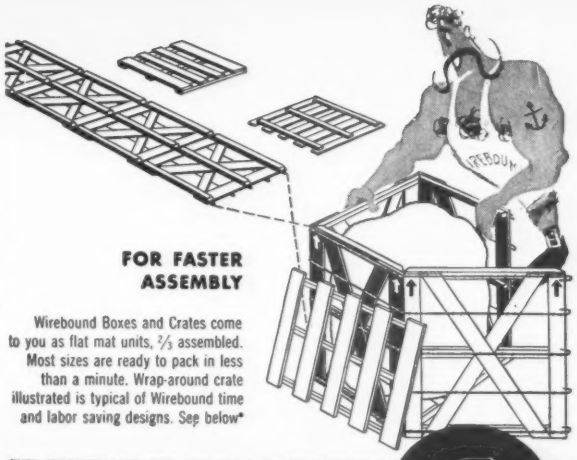

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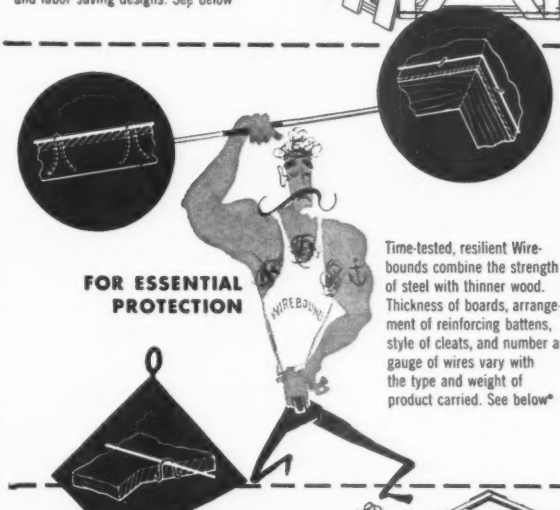
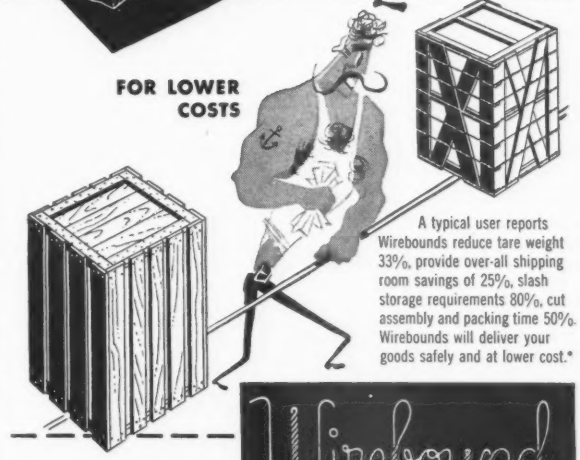
Wirebound Boxes and Crates come to you as flat mat units, ⅔ assembled. Most sizes are ready to pack in less than a minute. Wrap-around crate illustrated is typical of Wirebound time and labor saving designs. See below*



FOR ESSENTIAL PROTECTION

Time-tested, resilient Wirebounds combine the strength of steel with thinner wood. Thickness of boards, arrangement of reinforcing battens, style of cleats, and number and gauge of wires vary with the type and weight of product carried. See below*



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A typical user reports Wirebounds reduce tare weight 33%, provide over-all shipping room savings of 25%, slash storage requirements 80%, cut assembly and packing time 50%. Wirebounds will deliver your goods safely and at lower cost.*

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***Send for free book** . . . *contains complete details of Wirebound advantages, technical features and describes how Wirebounds are designed specifically to meet your requirements. Mail coupon today!*

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Need new fixtures—on the double."

"For any kind of buying question,
Classified's my best suggestion."

Hard-to-get items can't hide when you thumb through the Yellow Pages. For handy Classified lists just about every supplier and serviceman in town. So when you're ready to buy, find it fast in the Yellow Pages. Just as other buyers will find your products fast, too, when you advertise in Classified.

You'll find it fast in the

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THE WEST ON ITS WAY

NEVADA

COTTONWOOD LUMBERING GOES AHEAD—John Scott and Henry Patzig and a crew of fifteen men are now engaged in cottonwood lumbering, cutting and mill operations at Weeks on the Carson River. Upon the signing of contracts with Harbor Box Company of Los Angeles, the operators are prepared to deliver up to 3,000,000 feet of lumber each year.

NEW MEXICO

ROSWELL LUMBER COMPANY BURNS—Beck Lumber Company suffered fire damage estimated at $60,000 when wind-swept flames destroyed two-thirds of its holdings.

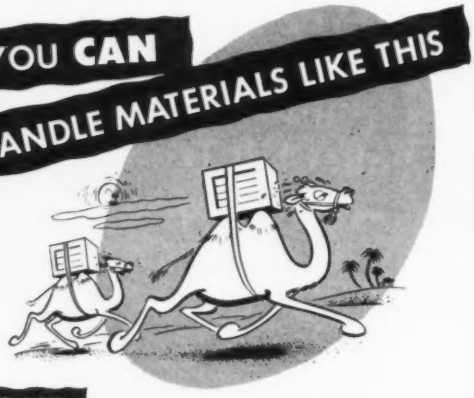
POTASH MINES MAY LOCATE AT CARLSBAD—Inquiries have been made to the State Highway department for roads to sites chosen by the Duval Sulphur and Potash Co., Houston, Texas, and the Southwestern Potash Company, in the Carlsbad area, for potash mine operations. Discussions are under way for locating in this area.

OREGON

NEW PILOT PLANT AT KLAMATH FALLS—Hercules Powder Co. begins construction on a new pilot plant at Klamath Falls where the study of the chemistry of Western wood is planned. Wood to be treated will start coming in immediately as it is gathered by procurement crews. George E. Bosserdet named general superintendent, and Lyle W. Rotherberger assistant.

DENNIS UNIFORM OCCUPIES NEW PLANT—Dennis Uniform Company now occupies new plant facilities at 105 S.E. Hawthorne Boulevard, Portland, with 20,000 square feet of production space.

YOU **CAN**
HANDLE MATERIALS LIKE THIS



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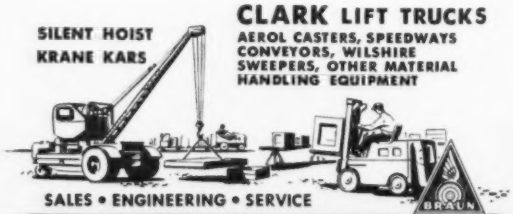

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THE WEST ON ITS WAY

UTAH

$750,000 OPERATIONS CENTER FOR UP&L—Plans are under way for construction of a $750,000 operations center and warehouse by Utah Power & Light Co. at 1359 W. North Temple Street, and will be built adjacent to the new $10,500,000 steam electric plant now under construction by the company.

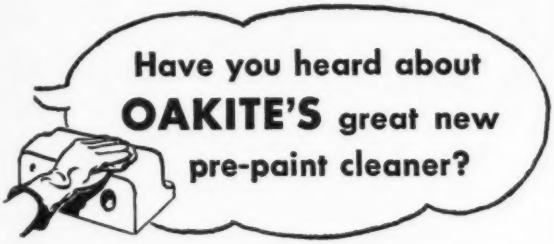
COBALT REFINERY PLANNED—Howe Sound Co. plans construction of a new cobalt refinery with an annual capacity of 2,000,000 pounds on the shores of the Great Salt Lake near Garfield. Construction will begin late this year or early in 1951.

$21,500,000 ASKED FOR DUGWAY DEVELOPMENT—Congress gets request for $21,500,000 for development at Dugway proving ground to be used as a Chemical Corps installation for secret field work in national defense, $10,000,000 of which is needed immediately to reopen the wartime testing installation.

AEC ESTABLISHES PURCHASE DEPOT—The U. S. Atomic Energy Commission establishes a small purchase depot at Marysville, for the purchase and stockpiling of uranium-bearing ores recently discovered in that area. American Smelting and Refinery which operates the Commission's ore buying station at Monticello, will also operate the purchase depot.

WASHINGTON

TACOMA UNIT FOR NATIONAL AUTOMOTIVE FIBRES—National Automotive Fibres, Inc., opens a branch in Tacoma. Establishment of the unit came at a result of an agreement with the Sound Mattress & Felt Co., whereby National Fibres take over the sisal division of the local manufacturing concern.



Oakite Compound No. 33 *in one operation* removes oil and rust and conditions metal surfaces for painting.

Oakite Compound No. 33 is a great soak cleaner for metal parts of moderate size; and great for hand-swabbing on large parts. It removes heat scale, other oxides, smuts, welding residues and marking inks from steel and aluminum. It develops splendid paint adhesion.

It saves money; frequently eliminating separate pickling operations on moderately rusty steel.

FREE For more information on Oakite Compound No. 33 write Oakite Products, Inc., 1001 E. First St., Los Angeles, Calif., or 681 Market St., Oakland, Calif.

Machine cleaning	Tank cleaning	Pickling
Electrocleaning	Burnishing	Paint stripping
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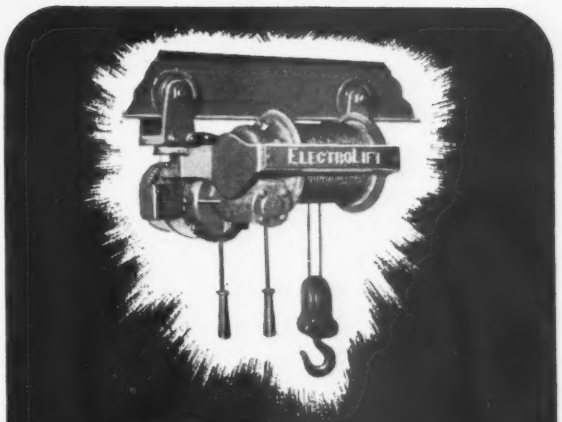

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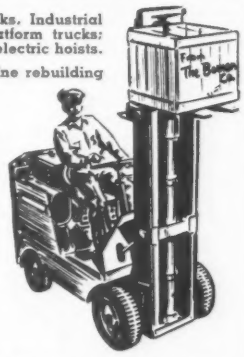

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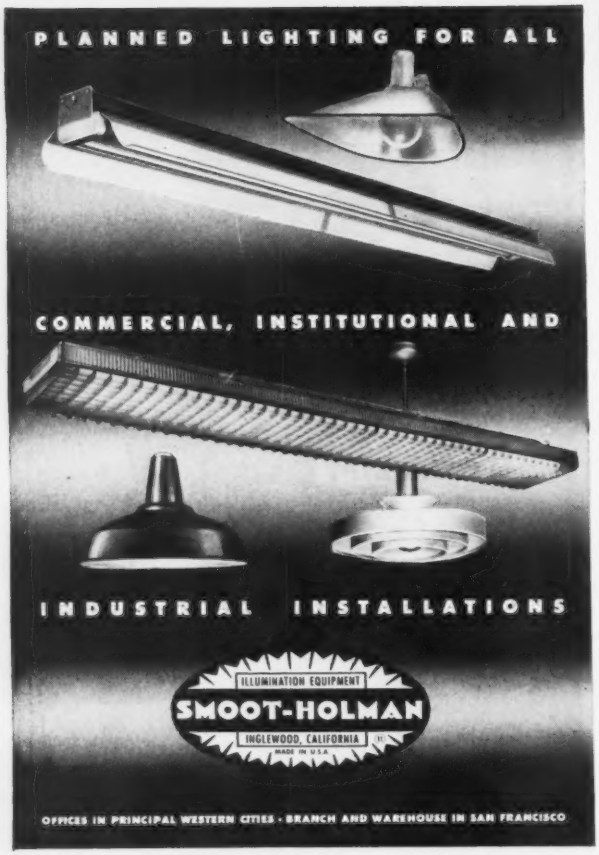
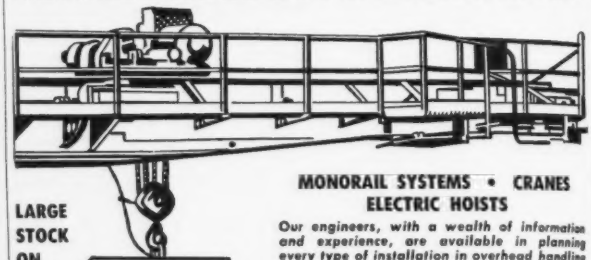


THE WEST ON ITS WAY

NEW SALMON CORP. FORMED—P. E. Harris Co., Inc. forms to acquire the Alaska salmon cannery interests of P. E. Harris & Co. Incorporators are Nick Bez, Seattle; Thomas M. Green, Jr., Seattle, and William R. Staats Co., Los Angeles investment bankers.

WEYERHAEUSER NEGOTIATES FOR PACIFIC COAST DIRECT LINE—Negotiations are under way by Weyerhaeuser Steamship Company for purchase of Pacific Coast Direct Line. No vessels are included in the physical assets of the latter company. Effect of the consolidation will be to strengthen the operation of both lines by placing them under single management. The two lines will continue to offer a shipping service between the East and West Coast on a 14-day frequency.

Universal CRANEHOIST & MONORAIL Co.



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NO SPRINGS TO BREAK
in the
Nutting JACK
IT'S ALWAYS DEPENDABLE

The Nutting Jack is the ONLY jack operated entirely by gravity and leverage. With no springs to break, there is no danger of your whole jack-skid system suddenly being put out of service.

One lift truck and two dead skids cost about the same as *two Nutting Jacks and twelve semi-live skids*. That's one reason why the Nutting Jack and Skid system can be such a money-saver in your plant, Material stored on semi-live skids is made mobile in a hurry. The jack may be coupled to one skid, then uncoupled and coupled to another faster than the time it takes to tell about it.

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Look in your classified phone directory for your Nutting representative, or write for Bulletin 48-JS.

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NUTTING TRUCK AND CASTER COMPANY
1721 WEST DIVISION ST., FARIBAULT, MINNESOTA

THE WEST ON ITS WAY

MARBLE FIRM CONTRACTS LET—A. M. Bengal Company receives contracts for construction of a new headquarters building for Swanson Stone and Marble Company at Second and Maple Streets, Spokane. A 900-square-foot shop for fabricating marble, and a large display room will be housed within the new building.

NATIONAL LEAD BUYS PAINT FIRM—National Lead Company announces purchase of assets of Schorn Paint Manufacturing Company of Seattle, which will be operated as part of National Lead Co.'s Pacific Coast branch. A fully-equipped and operating paint factory at Seattle and interests in several retail paint stores are among the assets acquired.

WYOMING

$1,000,000 ARTIFICIAL ICE PLANT—Pacific Fruit Express plans construction of an artificial ice plant at Laramie at a cost of more than $1,000,000. The concrete and steel plant will have a storage capacity of 40,000 tons of ice and will be erected on the west side of the present storage sheds.

$54 MILLION PIPELINE PROPOSED—Feasibility of constructing an oil pipeline from Casper to Chicago costing $54,000,000 is reported under consideration by several major oil companies operating in Wyoming. A thorough study of Wyoming oil reserves to determine whether the pipeline investment would be warranted is presumably being made by the operators.

FORECAST HEAVY CHEMICAL INDUSTRY—Forecast of the establishment of a giant heavy chemical industry in southern Montana and northern Wyoming is made by Dr. Ralph H. Espach, petroleum engineer for the U. S. Bureau of Mines. He believes the discovery of huge hydrogen sulphide reserves of 6½ million tons located in the oil fields of northern Wyoming promises new industrial life for the Rocky Mountain Empire.

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ELECTRIC wheels are furnished with or without roller bearings to fit your own axles or complete with axles. Steel tires, molded-on-tires, or pneumatic tires.

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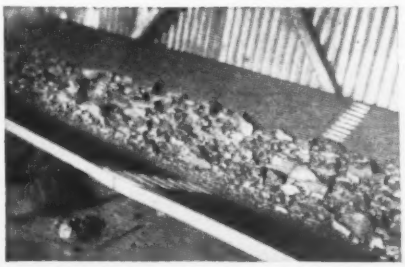

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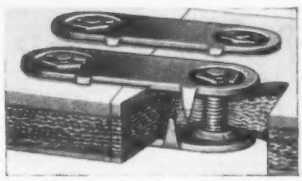

Compression Grip distributes strain over whole plate area

★ FLEXCO Fasteners make tight butt joints of great strength and durability.
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★ Made of Steel, "Monel," "Everdur." Also "Promal" top plates.
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WESTERNERS AT WORK

Arizona

Central Arizona Light & Power Company names BILL MARTIN, formerly Buckeye district manager, Western division manager, succeeding L. R. KIMMICH who becomes manager of Winslow district and Calapco's White Mountain division in northern Ariz.

California

T. G. HUGHES

T. G. HUGHES elected president of Oronite Chemical Company, a subsidiary of Standard Oil Company of California, succeeding GEORGE L. PARKHURST. Hughes, who joined Standard in 1926, has been with Oronite since its formation in 1943, and has been executive vice-president for the past year.

Kaiser Steel Corporation, Oakland 12, names GEORGE B. MCMEANS works manager, and EDWARD J. DUFFY general superintendent of the Kaiser Steel plant at Fontana. J. W. WALLING, Claremont, appointed assistant works manager; BARNEY N. DAGAN, Ontario, division superintendent, iron and steel; W. F. BOWERS, JR., Fontana, open hearth superintendent.

American Can Company elects C. W. ROBERTS vice-president in charge of the Pacific division.

Personnel changes at General Petroleum Corporation include: L. M. BUTTERWORTH named to newly-created post of manager, gasoline and fuels; H. ALBER appointed manager, retail merchandising; A. L. KNIPPING, JR. named manager, operations; B. F. BALL becomes assistant general manager; and D. C. BREES named manager, marketing services.

TRACY S. HOLMES opens mechanical engineering and industrial design offices at 8748 Melrose Avenue, Los Angeles 46. Holmes has been active in engineering and design since graduation from Annapolis in 1937. For the past two years he has been associated with the Motion Picture Research Council as staff engineer.

BURNHAM ADAMS, formerly vice-president of Lear, Inc., joins AiResearch Manufacturing Company as sales manager. ROY LECKEY becomes Washington representative succeeding W. J. PATTISON, transferred to Los Angeles to become assistant to the president.

C. E. MEAD, previously general manager of Lear, Inc., appointed manager of the company's California division.

RAYMOND A. SAHM becomes executive vice-president of India Paint and Lacquer Company of Los Angeles, succeeding the late W. W. SEAMAN. Other officers elected were: H. PENNINGTON, president and chairman of the board; MRS. H. W. ORR, secretary-treasurer; and KAY ARNOLD, assistant secretary-treasurer.

F. M. RICH, formerly vice-president in charge of operations at Kaiser Steel Corporation, Fontana, appointed general superintendent, Indiana Harbor Works of Inland Steel Company, Chicago.

JAMES S. RICE assumes duties as technical committee coordinator for Aircraft Industries Association, Western Region office, Los Angeles.

Mission Dry Corporation elects W. D. AITKEN president and general manager succeeding J. WILLARD PIPES, president. W. J. JUEHN elected vice-president in charge of advertising and sales promotion.

Pacific Tube Company, 5710 Smithway Street, Los Angeles 22, elects EDGAR H. LLOYD, president.

REAGAN C. STUNKEL, former president of Aviation Maintenance Corporation, joins Hydro-Aire, Inc., as executive vice-president.

CLAUDE N. MONSON, formerly of Northrop Aircraft, named staff assistant to PETE MORGAN, vice-president and treasurer of AiResearch Manufacturing Company.

Columbia Steel Company names JOHN M. HOOPER staff engineer in its Engineering Department.

VERN L. ADAMS, senior production foreman at General Petroleum Corporation's Santa Fe Springs operations since 1944, retires after 40 years of service, succeeded by J. W. NOBILE.

F. A. NICHOLS, personnel director of Friden Calculating Machine Co., Inc., named to State Advisory Committee of the Bureau of Trade and Industrial Education, California State Department of Education.

S. L. SPRAGGINS becomes vice-president in charge of manufacturing of Hoffman Radio Company, Los Angeles. JOHN A. RANKIN becomes vice-president in charge of engineering.

Feather River Pine Mills, Oroville, appoints CARL S. WALKER general manager.

CHARLES GRIMAUD joins the staff of Specialized Instruments Corporation, Belmont, as Field Engineer for Spinco Ultracentrifuges.

California Fruit Growers Exchange elects HARVEY A. LYNN president of the exchange and of Fruit Growers Supply Co., its supply affiliate.

J. D. STERLING elected president of Sunset Oil Company, succeeding J. P. VEZZETTI who becomes vice-president and general manager; H. F. NELSON appointed secretary-treasurer and E. A. SMITH named assistant secretary; MORTON A. STERLING and LOUIS LESSER appointed vice presidents.

American Coach & Body Co., manufacturer of equipment for public utilities and bodies for service trucks, appoints JOHN A. PODLESAK general manager of their California Division, Oakland.

GOVERNOR EARL WARREN appoints EARL D. PRUDDEN, vice-president of the Ryan Aeronautical Corporation in San Diego, to the California Aeronautics Commission, replacing DAVID G. FLEET.

Shand & Jurs, 917 Carlton Street, Berkeley, names ART ACKLEY, mechanical engineer, to its engineering staff.

COLONEL CLARENCE M. YOUNG, general manager of the Los Angeles Department of Airports, resigns to become a vice-president of Pan American World Airways.

Golden State Co., Ltd., names O. M. RUSSELL production manager for the company's southern division. WALTER E. THOMAS succeeds Russell as Los Banos branch manager of its dry milk plant. EDWARD D. STURTEVANT appointed southern division manager.

Checo Products Are Timken Bearing Equipped

CRANES
Top riding 1 to 30 ton, underhung 1 to 5 ton motor driven or hand operated.

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Checo top riding hoist. Wright, Yale & Towne, and Meteor monorail hoists.

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Distributors for Dorris helical gear, Timken bearing, speed reducers.

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I beam monorails engineered and installed.

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Magnetic crane control panels.

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Maintenance service on all types of hoisting equipment.

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Personnel changes at Arrowhead and Puritas Waters Inc., Los Angeles, include: DENNIS EDMONDSON, Venice manager, assumes position of manager for San Diego territory; W. F. JEWETT, Long Beach manager, becomes manager for the Venice area; WILLIAM M. YOUNG, head of Burbank branch, named manager for Long Beach territory; LOUIS A. GERBUS, San Bernardino manager, new head of Burbank branch; and PAUL S. REED, Los Angeles sales supervisor, takes post of San Bernardino branch manager.

JOHN SPARROWK promoted to the newly-created position of assistant to the president of Pacific Bedding Company, Los Angeles. IRVIN TANEYHILL succeeds Sparrowk as sales representative in southern California.

R. E. JOHNSON appointed Los Angeles manager of General Electric Company's Industrial Division, succeeding E. M. ELLIS who becomes Los Angeles manager of the company's Apparatus Department which includes this division.

ARTHUR S. DUDLEY retires as manager of the Sacramento Chamber of Commerce, succeeded by BEVERLY C. GIBSON.

JOHN E. SLATKY named assistant manager of the Industrial Department of the San Francisco Chamber of Commerce, replacing BALLARD WHITE.

Wine Institute elects JOHN R. DEANE, Italian Swiss Colony, president, succeeding HARRY BACCIGALUPPI; LOUIS PETRI, Madera, Escalon and San Francisco, first vice-president; BRIGADIER GENERAL JAMES K. HERBERT, Fresno, second vice-president; L. K. MARSHALL, Lodi, third vice-president; JAMES L. VAI, Cucamonga, treasurer; H. A. CADDOW, San Francisco, secretary manager; and JEFFERSON E. PEYSER, San Francisco, general counsel.

W. G. MCDOWELL appointed manager of Pacific Airmotive's Burbank division.

W. J. CERNY promoted to assistant to the president of Northrop Aircraft, Inc., Hawthorne; WARREN G. KNIERIEM named chief engineer. Other personnel changes include: KENNETH P. BOWEN named vice-president in charge of manufacturing, succeeding B. G. REED, resigned; ROLAND J. PAGEN elected vice-president and director of finance and accounts; GEORGE T. JOHNSON appointed controller; and J. H. HINCHLIFFE named director of material, replacing CONRAD KUNZE, resigned.

General Paint Corporation announces election of H. J. DEAN, head of central division, S. C. RASMUSSEN, JR., Portland division manager, and J. C. PORTER, Spokane division manager, vice-presidents.

Colorado

F. S. JONES elected vice-president in charge of sales by CF&I, Denver, succeeding NEWELL H. ORR, retired. JAMES N. COUNTER becomes general manager, commercial steel sales, Western division, succeeding Jones. ROBERT F. BOURNE appointed manager of rolled product sales, Counter's former position; J. R. CATEN, Phoenix, becomes division sales manager in Denver; and LUKE HELMS, JR., Fort Worth, Texas, goes to Phoenix as district manager.

Pueblo Foreman's club elects FRED WRAY, president; DAYLE HAWKINS, vice-president; and V. T. COCHRAN, advisory council member.

J. D. PRICE, superintendent of CF&I coke and coal chemicals department, Pueblo,

"Beware of little expenses! A small leak will sink a great ship."

—Ben Franklin's Almanac, 1757

One penny dropped maketh not much noise but thousands of pennies dropped over the year maketh a big bang before ye annual stockholders meeting.

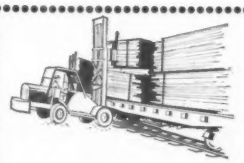
—Acme Steel's Notebook, 1950

Dear Sir: Maybe you have had too much else on your mind to worry about how your company packages, ships, or bundles materials within your plant.

But in these days of rising costs, you can't afford to pass up the savings you may be able to make in this part of your business.

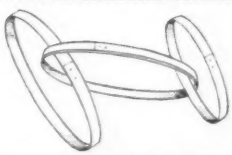
Here at Acme Steel Company, we have shown more than 50,000 customers how to cut costs, save time, labor and materials with Acme flat steel strapping, Acme stitching machines and wire, and other Acme Steel products. In 9 out of 10 cases, Acme sales engineers are able to start you on the road to thrifty benefits.

Some specific examples of what we can do are shown here. It takes only a minute to read them—and not much longer to pick up your telephone and call the Acme Steel Company service office nearest you. (There are 46 of these offices in the principal cities of the U.S. and Canada.) Or mail the coupon today for more information, and detailed case studies in your particular field.



Big savings in handling costs

Steiner Lumber Co., Fresno, Cal., cuts costs 50%. West Fresno Lumber Co., Fresno, Cal., reduces labor costs 70%. Acme Steelstrap Method of bundling lumber means quicker tallying, less damage and pilfering, reduced danger of injury in the lumber industry—and in your business, too!



Hoops—for everything but skirts!

And if there were a hoop skirt manufacturer left, he would probably come to us for better hoops at lower cost. As it is, Acme Steel Hoops, for barrels, kegs, and special containers, are helping the cooperage industry cut costs and save money.

ACME STEEL

Of the 3759 Acme Steel employees, 318 or 8.5% have worked with Acme for more than 25 years each and are members of our Quarter Century Club. Their total service represents 8618 years—tribute to "A Good Place to Work."

ACME STEEL CO. CHICAGO

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ACME STEEL COMPANY, Dept. WI-50, 2838 Archer Avenue, Chicago 8, Illinois

We manufacture _____. Please send me booklets on Acme Methods checked.

- ☐ Please have sales engineer call.
- ☐ **Packaging, Shipping, Materials Handling**—"Savings in Shipping" tells how to save money and safeguard customer good will with Acme Steelstrap.
- ☐ **Shipping (Carload and L.C.L.)**—"Acme Unit-Load"—The story of reduced damage claims and better handling for shippers.
- ☐ **Bag and Box Assembly**—"Profit by Stitching" demonstrates cost-cutting Acme Silverstitchers and Acme-Champion Stitchers.
- ☐ **Product Assembly**—"Acme-Morrison Metal Stitchers"—for savings in fastening metal-to-metal or metal-to-other materials.
- ☐ **Book Assembly**—"Acme-Morrison Book Stitchers" for savings in the graphic arts field.

NAME _____ POSITION _____

COMPANY _____

STREET _____

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ACME STEEL CO. CHICAGO

selected by the United Nations to serve as one of three advisors for rehabilitation of the iron and steel industry in Mexico.

Montana

Carter Oil Company names B. B. Bowman office manager in charge of marketing accounting in the Billings division office, and G. T. Phipps operations manager.

Nevada

L. G. Immonen appointed superintendent of concentrator for Kennecott Copper Corporation's Nevada Mines Division, McGill, Nevada, succeeding Floyd M. Jardine, retired.

Oregon

Weyerhaeuser Timber Co. names Arthur O. Karlen manager of Coos Bay, Oregon, division, effective June 1st. Karlen formerly was assistant manager of Longview, Washington, branch.

B. H. McLAIN

B. H. McClain, now beginning his ninth year with the P & C Hand Forged Tool Company of Portland, named vice-president. McClain will continue to act as treasurer, and in addition will assume executive duties in the sales promotion activities of the company.

HAL WHITE, JR.

Hal White, Jr. appointed purchasing engineer for Hyster Company, industrial truck and tractor attachment manufacturer of Portland, Oregon, Peoria and Danville, Illinois.

Guy Leonard appointed assistant manager of public relations for Portland Chamber of Commerce.

Utah

General Petroleum Corporation names John B. Erickson manager of the Utah-Nevada division with headquarters in Salt Lake City, succeeding V. I. Powels, resigned.

L. F. Pett, former mine superintendent at Kennecott Copper Corporation's open pit mine at Bingham, named superintendent of mines. V. S. Barlow, general mine foreman, moves to assistant mine superintendent, and Ernest C. Simkins becomes general mine foreman.

Ernest G. Agutter becomes president and manager of Industrial Supply Company, 121-135 Motor Avenue, Salt Lake City, succeeding Rudolph Orlob. Harold H. Smith elected vice president and treasurer, and Josephine Madsen appointed secretary.

Washington

O. A. Tucker, formerly vice-president in charge of operations, appointed vice-president in charge of sales and general administration for Pacific Car & Foundry Co., Renton.

Christian W. Planje named vice-president and general manager of Gladding McBean Co., Seattle. James W. Mahoney transfers from the Los Angeles office to assume Planje's duties in San Francisco.

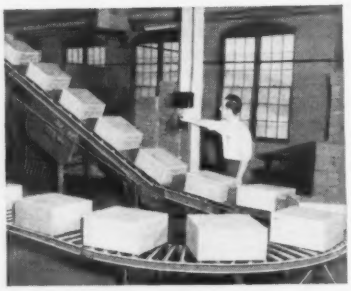
Jay Morrison, staff assistant to William M. Allen, president of Boeing Airplane Co., named manager of Boeing's gas-turbine project.

State Forest Products Commission appoints Ralph G. DeMoisy technical director of Washington State Institute of Forest Products, succeeding Dr. O. Henry Schrader, resigned. John W. Allen named field supervisor for the institute.

EARL R. DODD

Earl R. Dodd becomes manager of American-Marietta Company Adhesive Divisions in Seattle, Washington and New Westminster, B. C. Operations in Seattle will be combined in management with those of the American-Marietta Co. of Canada, Ltd., of which Dodd has been manager since its inception.

YOU'LL DO IT BEST WITH MATHEWS CONVEYERS



Have you a conveying problem? Moving packaged materials up, down or level? Whatever it might be, there is Mathews equipment available to solve it for you, and to save you money and time.

Mathews standardized Belt Conveyers are easily erected. And, if you need Portable Belt Conveyers, or sections of Roller and Wheel Conveyers, Mathews supplies them from its complete line. Engineered systems are given immediate attention by Mathews Engineers.

Send for problem-solving bulletins today!

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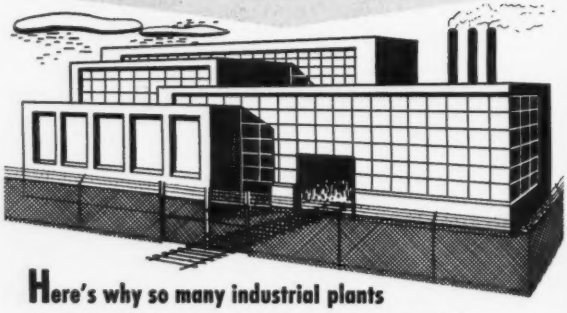
Mathews Conveyer Company . . Ellwood City, Pennsylvania
PACIFIC COAST DIVISION
Mathews Conveyer Company West Coast . San Carlos, California
CANADIAN DIVISION
Mathews Conveyer Company, Ltd. . . . Port Hope, Ontario

For a REAL Buy, Get CF&I
REALOCK FENCE



Here's why so many industrial plants have found that REALOCK® Fence is a REAL buy . . .

- the first cost is moderate
- harmonizes with any style architecture
- made of steel and galvanized after weaving, it is strong and durable; lasts for years without costly maintenance
- fence and gates are tailor-made to provide the protection desired
- tamper-proof fittings and hard-to-climb diagonal mesh provide REAL protection

Free Estimates...Expert Installation Service

FOR A REAL BUY, BUY REALOCK

The Colorado Fuel and Iron Corporation
General Offices: Denver, Colorado
Pacific Coast Sales: The California Wire Cloth Corporation, Oakland, Calif.

Western TRADE WINDS

News about those who distribute and sell industrial equipment and materials

P. S. BRALLIER

Stauffer Chemical Company appoints PAUL S. BRALLIER to post of Director of Market Development. He will act as liaison between Stauffer's Research and Sales Departments in evaluating the sales potentials of and developing markets for new chlorine and alkali products. THOMAS P. TURCHAN, formerly superintendent at Stauffer's Henderson, Nevada plant, succeeds Brallier as plant manager of the Niagara Falls plant.

Seabury Engineering Company, 2311 East 8th Street, Los Angeles 21, named exclusive factory representative in Southern California by *Calabar Corp.,* South Gate, Calif., for Con-L-Duit Safety Enclosures for conductor bar and Calabar Fluid Tractors used for propelling cranes and hoists. In addition to the Calabar products, Seabury Engineering Company are factory representatives for manufacturers of hoists, hydraulic lifts, chain blocks, conveyors and cranes.

Aluminum Co. of America names J. COLIN SMITH Northwest district manager with headquarters in Seattle, succeeding C. R. BOYLE, who transfers to the Los Angeles territory. Smith was formerly sales representative at Fort Wayne, Indiana. Boyle replaces WILLIAM C. LYNCH who remains on the West Coast in the capacity of assistant products manager.

E. C. Buehrer Associates, 562 Bryant St., San Francisco, announces the addition of two men to its sales and service staffs. Joining the sales department is ARTHUR ISH, who will cover the East Bay area. Named to the service and inspection staff is JOSEPH LOVRIN. The firm is San Francisco area representative for the Automatic Transportation Company, Chicago manufacturers of Skylift and Transporter electric industrial trucks.

Calaveras Cement Company appoint GEORGE ELLIOTT special salesman for the company's recently re-introduced White Portland Cement in the eleven Western states, with headquarters in San Francisco. ERNEST ROHR succeeds Elliott as company representative in the Fresno area. CHARLES H. LAUGHLIN named sales representative in Modesto.

Black & Decker Mfg. Co., Towson 4, Maryland, opens new service station and sales office at 1640 N.W. Johnston Street. and offers complete facilities for repair and service to tool users in Oregon, southern Washington and southern Idaho.

Gunn, Carle & Co., San Francisco, dissolves partnership and discontinues operations as of April 30.

C. F. ELDER

C. F. ELDER, a partner and sales manager of *Gunn, Carle & Co.,* will carry on the materials handling phase of that business without service interruption. Elder forms a new firm, as of May 1, Elder & Co., at 390 7th St., San Francisco, and retains Gunn, Carle's phone number, Underhill 1-5480. Associated with him is JAY EASTERWOOD, formerly with Gunn, Carle. Elder & Co. will operate from Bakersfield to the Oregon line and through central and northern Nevada. Lines handled are: Darnell casters, Moto-Trucks, Baker Trucks, Bruer Electric Co., Tornado Blowers and industrial cleaners, Geneva wheels, hand trucks, flat trucks, and the Ramset fastening system.

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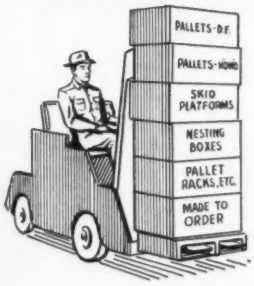
Largest Manufacturer in the West
OF
SKIDS & PALLETS



OFFERS QUALITY BACKED BY GUARANTEE
FAST DELIVERY
REPLACEMENT PLANKS FOR LIFETIME OF SKIDS
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Our large volume assures low prices
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for MAXIMUM OPERATING EFFICIENCY

Western Representatives
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Ask Metzgar to suggest a "Most-for-your-money" conveyor system to meet your requirements.

Reduce handling costs will strengthen your position in a market that is growing more and more competitive.

WRITE *for* DESCRIPTIVE FOLDER

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GRAND RAPIDS 4, MICH.

F. K. PULSIFER

Chase Sales organization creates a new district known as Pacific Coast Division. It will include the territories covered by the Chase branches at Los Angeles, San Francisco and Seattle, with headquarters in Los Angeles. FREDERICK K. PULSIFER appointed sales manager of the Pacific Coast Division.

Amalgamated Sugar Company, 704 Cascade Building, Portland, appoints HARRY MOSS, JR. Oregon sales representative, succeeding the late LLOYD BROOKS.

LEON A. BLUM named sales manager for the San Francisco plant of *Federated Metals division, American Smelting & Refining Co.*, succeeding FOREST A. WAHLHEIM, retired. DONALD H. BEILSTEIN named assitsant plant superintendent.

C. P. CROWLEY, 711 Gibbons Street, Los Angeles, appointed sales representative for *H. K. Porter Co., Inc.*, manufacturers of industrial and construction equipment machinery. Crowley will cover southern California, southern Nevada and Arizona.

American Lumber & Treating Company's Portland sales offices moved from Terminal Sales Building to 370 Pittock Block. Promotion and sale in Oregon, Washington, Montana, Idaho and Wyoming of forest products chemically alloyed to resist fire, rot and insects are handled from that office.

Lukens Steel Company and its division, *By-Products Steel Co.* and *Lukenweld*, Coatesville, Pa. open a district sales office in Los Angeles, for the sale of carbon, low alloy, and stainless-clad steel plates and steel plate specialties in the southern California area. *C. T. Hansen & Co.*, which has been sales representatives for Lukens and its divisions in the Los Angeles district, will confine future activities for the firm to the San Francisco and Seattle, Wash., areas. E. EARL MCELROY, associated with Lukens Steel Company on the West Coast for last seven years, becomes district manager of sales at Los Angeles.

H. K. Porter Co., Inc., appoint *Robert Taylor & Sons* as representatives in Utah, Idaho and Montana, with offices located at 1077 South Main Street, Salt Lake City.

R. S. BELNAP named district manager for *General Electric Supply Corporation* at Salt Lake City, succeeding E. E. BRAZIER, retired.

RICHARD AUBREY

RICHARD AUBREY appointed as *Kaiser Steel* liaison man on tubular steel products. In this capacity Aubrey will stimulate sales and help solve customers' pipeline problems as part of Kaiser Steel's expanding entry into production of big pipe for the pipeline and petroleum industries.

ELDER & CO.

SUCCESSORS TO
GUNN-CARLE & CO.

WILL OPEN MAY 1
at
390 - 7TH STREET
SAN FRANCISCO

Sales and Service for:

BAKER ELECTRIC TRUCKS
MOTO-TRUC CO.
DARNELL CASTERS
RAMSET FASTENINGS
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ELDER & CO.

Successors to Gunn-Carle & Co.

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CALIFORNIA

Fits into your Materials Handling Picture ... Profitably!

fmc ACCORDION CONVEYORS AND CLAMP TRUCKS

★ Each sturdily built unit may be extended to a full one-hundred inches; collapsed to thirty-five inches, or set in curves to meet any temporary or permanent installation need. Available in both roller or side wheel types; steel or aluminum. ★ A complete line of FMC clamp trucks further aids in cutting your materials handling costs. Check prices and freight rates; then consult your nearest FMC sales-engineer.

Write for Bulletin 111

FOOD MACHINERY AND CHEMICAL CORPORATION

Packing Equipment Division ★ Riverside, California

SALES AND SERVICE BRANCHES: Lindsay, Lodi, Salinas, Santa Paula, Fullerton, Imperial, Calif.; Phoenix, Ariz.; McAllen, Texas.

CHICAGO "Safety-Plus" Socket Screws make your product better 4 ways

- **THEY'RE STRONGER**—They fasten products MORE securely—give a sturdier, tighter "hold".
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- **MORE ACCURATE** — They're consistently more accurate in dimensions, have sharper, smoother, truer threads, start in easier the first time.
- **THEY COST LESS**—Tighter hold, plus fewer screws, plus a faster fit, means LOWER COSTS—in screws as well as production time. There is a Chicago "Safety Plus" product designed to give you a tighter, lower cost fastening for ANY heavy duty purpose.

Find the type you need from this list:

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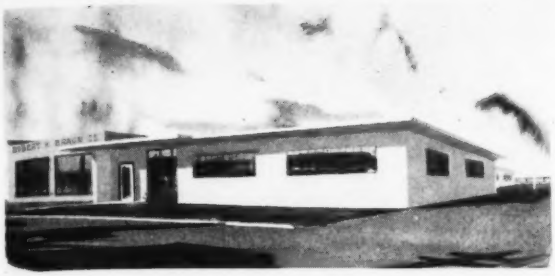
Service-conscious Industrial Supply Distributors EVERYWHERE carry complete stocks of Chicago "Safety Plus" Products. To speed delivery time, call the one nearest you.

The CHICAGO SCREW COMPANY
2517 WASHINGTON BLVD., • BELLWOOD, ILL.
Established 1872



Robert H. Braun Company, 3008 East Olympic Boulevard, Los Angeles 23, are now constructing the office, warehouse and job shop building shown above, at 5519 Jillson Street, Los Angeles 22. There will be a permanent Materials Handling Exhibit. The new plant is scheduled to start operation some time during June. Mr. Braun began his own organization in 1931 by representing various Eastern manufacturers of materials handling equipment. Today the firm handles the line of industrial trucks manufactured by Clark Equipment Company at Battle Creek, Michigan; the Silent Hoist and Crane Company's swing boom crane, the KRANE KAR, as well as other lines of materials handling equipment. ROBERT H. BRAUN is president of the firm; DON S. FERGUSON is secretary-treasurer; and ROBERT BRAUN, JR. is vice-president. This firm operates through the fourteen southern counties of California, and maintains an office at 444 Blackstone Avenue, Fresno. They also cover the state of Arizona with a branch office at 32 W. Jefferson Street, Phoenix. Both depots and service giving facilities are incorporated at both points.

PAUL ROBERTS joins *McKinsey & Company*, management consultants, 235 Montgomery Street, San Francisco 4, to direct sales and supervisory training.

Truscon Steel Company, Youngstown 1, Ohio, appoints EUGENE A. HALL sales engineer covering the distribution of all Truscon products in eastern Washington, northern Idaho and western Montana.

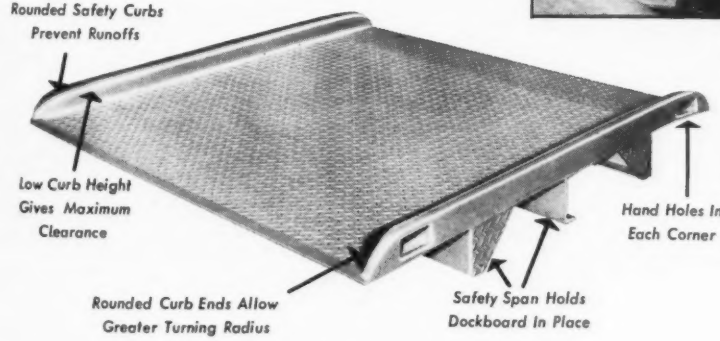
Kinney Manufacturing Company and *King Knight Company* move into new and larger quarters at 3942 West Slauson Avenue, Los Angeles 43. Sales and service continue under direction of ROY A. WOLTMAN.

J. B. ERICKSON

JOHN B. ERICKSON named manager of the Utah-Nevada division of General Petroleum Corporation, succeeding V. I. POWELLS, resigned. Erickson will make his headquarters in Salt Lake City and will be the company's principal marketing representative in Utah, Nevada and Eastern Idaho.

MAGCOA *Magnesium* DOCKBOARDS

...will solve your carloading problems


Rounded Safety Curbs Prevent Runoffs
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Safety Span Holds Dockboard In Place

★ Weigh ¼ as much as steel ramps of equal size and strength
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8922 West 25th Street, Los Angeles, Calif.
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TWENTY PAGES OF COST-SAVING IDEAS

HOT OFF THE PRESS . . . NEWS OF IMPORTANCE TO BUSINESS EXECUTIVES

DAY AFTER DAY, new and profitable uses are found for CLARK fork-lift trucks and industrial towing tractors. Top flight operators, materials handling engineers and other plant officials, continue to develop applications for these machines that make them mobile "gold mines." Almost without exception, such new uses are as valuable to others as to their originators.

Many of these new ideas and applications are presented and illustrated in CLARK'S new MATERIAL HANDLING NEWS.

"Profitable reading" best describes this publication. If you already operate CLARK fork trucks, it may help you to employ them to even better advantage. If you are not yet a CLARK fork-truck user, you're certain to learn how they can be employed to your considerable profit.

CLARK EQUIPMENT COMPANY
Industrial Truck Division • Battle Creek 28, Michigan

CLARK
ELECTRIC AND GAS POWERED
FORK TRUCKS
AND INDUSTRIAL TOWING TRACTORS

Western Dealers

ROBERT H. BRAUN COMPANY
LOS ANGELES, California — 3008 East Olympic Blvd.
Fresno, California — 444 Blackstone Avenue
Phoenix, Arizona — 32 West Jefferson

GLEN L. CODMAN CO., INC.
OAKLAND, California — 10521 Pearmain Street
Lodi, California — 1661 South Church Street

PRESTON FALLER COMPANY
SEATTLE, Washington — 1921 Minor Avenue
Eugene, Oregon — 891 Taylor Street
Portland, Oregon — 1220 S. W. Morrison Street
Spokane, Washington — East 41 Gray Avenue

ALBERT J. ISAACSEN COMPANY, INC.
SALT LAKE CITY, Utah — 45 South 3rd West Street

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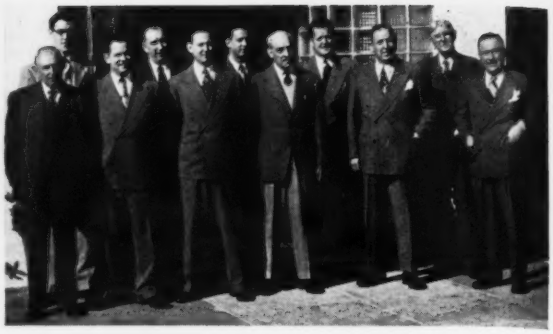


Kay-Brunner Steel Products, Inc., Los Angeles, this month held a three-day conference of executives, division heads and sales personnel at the main plant in Alhambra. In attendance, as shown in the photograph, were, from left to right, DAVE ARDIANA and ROBERT L. KAY, Automotive Division Sales; ED KIESER, Northern California, Oregon, Utah and Nevada representative; ELLIOT ATWATER and ROBERT KADZ, Automotive Division Sales; DICK BROOKE, Pacific Northwest representative; J. F. BRUNNER, SR., Secretary-Treasurer, Kay-Brunner Steel Products, Inc.; LEE BOEBEL, Sales Manager Equipment Division; L. D. KAY, President, Kay-Brunner Steel Products, Inc.; HARRY KAY, Automotive Division Sales, and MARS ATWATER, Sales Manager Automotive Division. In attendance, but not shown in picture, was MAJOR J. F. BRUNNER, JR., Manager Equipment Division.

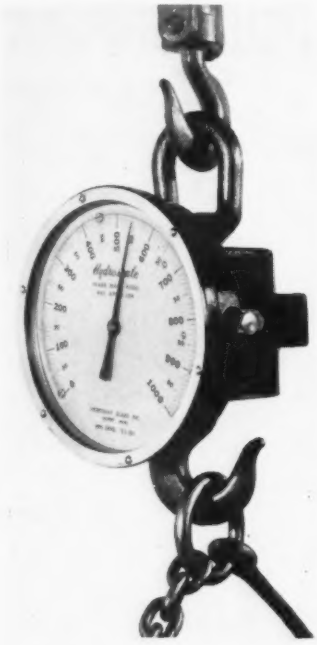
RALPH J. OSBORN

RALPH J. OSBORN appointed sales manager of *Airquipment Company*, subsidiary of Lockheed Aircraft Corporation, Burbank, California. For the past thirteen years, Osborn has been connected with Lockheed Aircraft Corporation in charge of the Vendor Claims and Warranty Department and, later, as general purchasing agent.

Pennsylvania Salt Manufacturing Company appoints ALVIN C. ASH as technical sales service representative of Washington's Agricultural Chemicals Division, with headquarters at the company's plant in Tacoma.

Gil-Lair Products, Inc., Pasadena, California, names *Allied Supply Company*, Los Angeles, and *Mission Pipe & Supply Co.*, San Diego, selected stocking distributors in their areas.

Lima-Hamilton Corporation names HENRIK GREGER Diesel engine representative in California, with headquarters at 315 25th Avenue, San Mateo. Telephone: Fireside 5-0781.



HYDRAULIC SCALE

weighs as it lifts

Reduces time, space and equipment tie-up in weighing operations

HYDROSCALE

eliminates the need of providing floor space for weighing as well as special means of transporting materials to weighing locations. Most important of all is the fact that HYDROSCALE keeps the load moving from one operation to the next with no intermediate point for load and man power tie-ups. Hydroscale takes the convey out of weigh!

HYDROSCALE

is a rugged, compact, and precise instrument that operates on the static pressure principle. It employs no springs, weights or other wear parts, as commonly used in obtaining weight registration. HYDROSCALES are permanently sealed to prevent damage or tampering and to minimize variations usually resulting from temperature changes, etc.

TARE ADJUSTMENT

Simplifies weighing of net loads. Especially helpful in "Weighing In" bulk goods and valuable loads. By adjusting pointer to "zero" when tare load is imposed a direct "net load" 500 to 100,000 capacities reading is indicated. 500 to 50,000 lb. capacities . . . Dial sizes from 12" to 30" . . . Half to 100 lb. graduations . . . Accurate within ½% of capacity.

Hydroscale

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DETROIT 19 — MICHIGAN

Western Representative

CARL J. KENNEDY

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CHapman 5-3145

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QUALITY 8x10 PHOTOS
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as low as 7¢ each

Victor Equipment Company, 844 Folsom Street, San Francisco 7, appointed distributors of *Schramm Air Compressors* for all of Southern California. This distributorship originally was held by Shaw Sales and Equipment Company, Inc., of Los Angeles.

Stanley E. Morris Co., Los Angeles distributors of materials handling and industrial equipment, add WM. E. MOFFITT to their staff of sales engineers. Moffitt will represent them on behalf of "The Plantman," a manually operated industrial sweeper manufactured by Handling Devices, Inc.

West Bend Equipment Company moves from 8303 Denker Avenue, Los Angeles, to 638 E. Calaveras Street, Altadena, Calif.

Personnel changes in *Kaiser Steel Corporation* include: Promotion of J. J. CARLSON from sales manager of the southern California district to the post of assistant general sales manager with headquarters in Oakland. Succeeding Carlson in Los Angeles will be C. LEE EMERSON, who formerly served as manager of rolled product sales in Oakland. O. D. HOLE named manager of cold rolled strip sales.

HAL CORBETT, formerly with the Roll-Rite Corporation, joins the sales force of *Glen L. Codman Company, Inc.*, 10521 Pearmain St., Oakland, California.

Rockbestos Products Corp., New Haven 4, Conn., appoints HOWARD G. JONES manager of the Glendale office, replacing WARREN S. JONES who becomes district manager for their New Orleans, Louisiana, branch.

Morehouse Industries of Los Angeles, manufacturers of grinding, dispersing, homogenizing and disintegrating equipment, played hosts to 170 chemists and production men at a buffet supper recently. Conducting the demonstration and explaining the Morehouse Speedline grinding principle was GEORGE MISSBACH, sales manager of the company. Missbach showed equipment available for use in a plant by its own personnel. Complete information may be obtained by contacting Morehouse Industries, 1156 San Fernando Road, Los Angeles 65, California.

Coast Equipment Company, San Francisco construction, industrial and mining machinery distributor, appointed exclusive northern California sales and service representative for *Joy Manufacturing Company* of Pittsburgh, Pa.

SOLVE TOUGH MATERIALS HANDLING PROBLEMS WITH *AMERICAN* FLEXIBLE METAL HOSE

If your operation involves the control or flow of semi-solids, liquids, gases, chemicals, steam or air, an *AMERICAN* Flexible Metal Hose assembly can be tailored to your particular requirements.

You can correct misalignment; connect moving parts and eliminate vibration; simplify installation; and provide a flexible, free end. Assemblies are available in most corrosion resistant metals.

Call for additional information— no obligation, of course.

F. SOMERS PETERSON CO.
524 Folsom Street, San Francisco, SUtter 1-5416
413 East 12th St., Los Angeles, PRospect 6151

NAME PLATES
ETCHING COMPANY OF AMERICA
55 New Montgomery Street
DOuglas 2-8434 San Francisco, Calif.

Hood Rubber Company appoint *Western Asbestos Supply Co.* distributor for Hood Rubber Tile Flooring in northern California and western Nevada. Stocks are now being carried by Western Asbestos Supply Co. in their San Francisco and Oakland warehouses to serve the flooring contractor trade.

Caterpillar Tractor Co. appoints FRANK S. FOSTER assistant sales manager, Western division, succeeding TRUMAN E. SAGE, who joins *Northern Commercial Company*, Seattle, the Company's distributor for Alaska. GORDON J. FOWLER, Western division district representative since 1946, promoted to assistant sales manager, Eastern division, succeeding Foster.

Promotions in the Los Angeles Sales Office of *Columbia Steel Company*, a U. S. Steel Corporation subsidiary, include: LORING S. BROCK named manager of sales, and L. W. HALL, manager of sales. M. J. COVER appointed division staff manager. DAN M. PETRAKIS, formerly assistant service manager, named service manager. All four executives will maintain their headquarters at 2087 East Slauson Avenue, Los Angeles.

American Pulley Company of Philadelphia appoints *Edward D. Maltby Company* Arizona distributor. American's products to be handled by Maltby include Wedgebelt V-Belt drives, Econ-o-matic motor bases, speed reducers, sheaves and steel split pulleys for flat belt drives and conveyors.

PALLETS
Buy direct from the Mill at Medford, Oregon
The finest at the lowest cost. Send us your specifications and we'll be pleased to quote you.
HAMERSLAG EQUIPMENT CO.
7 Front St., San Francisco YUkon 2-4521

. . . DIESEL TECHNICAL GRADUATE . . .
A. E. and commercial pilot. Last five years maintenance supervisor and sales and service representative large aircraft manufacturer. Desires similar position with manufacturer or distributor of Diesel engines or accessories or mechanical equipment. Best references. Box 362, Western Industry, 609 Mission St., San Francisco 5, Calif.

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Cal King TU-3176 | MATERIAL HANDLING EQUIPMENT
Lift Trucks • Hand Trucks • Conveyors
Hoists & Cranes
Casters & Wheels
IRVING G. KING & CO. ★ SINCE 1930
821 MATEO ST. L. A. 21

Ziegler Steel Service Company appoints HOWARD C. STROUP sales representative for western Los Angeles, the Beach Cities and Orange County, and S. B. THOMPSON purchasing agent and office manager for the company, with headquarters at 7022 Telegraph Road, Los Angeles 22.

Blackhawk Manufacturing Company, Milwaukee, Wisconsin, names ART COMERFORD Associate District Manager with headquarters at 1918 W. 97th Street, Seattle 7, Washington. His territory covers all of northern California, Lewiston, Idaho, Elko, Ely, Reno, Nevada; all of Oregon, and all of Washington and Alaska.

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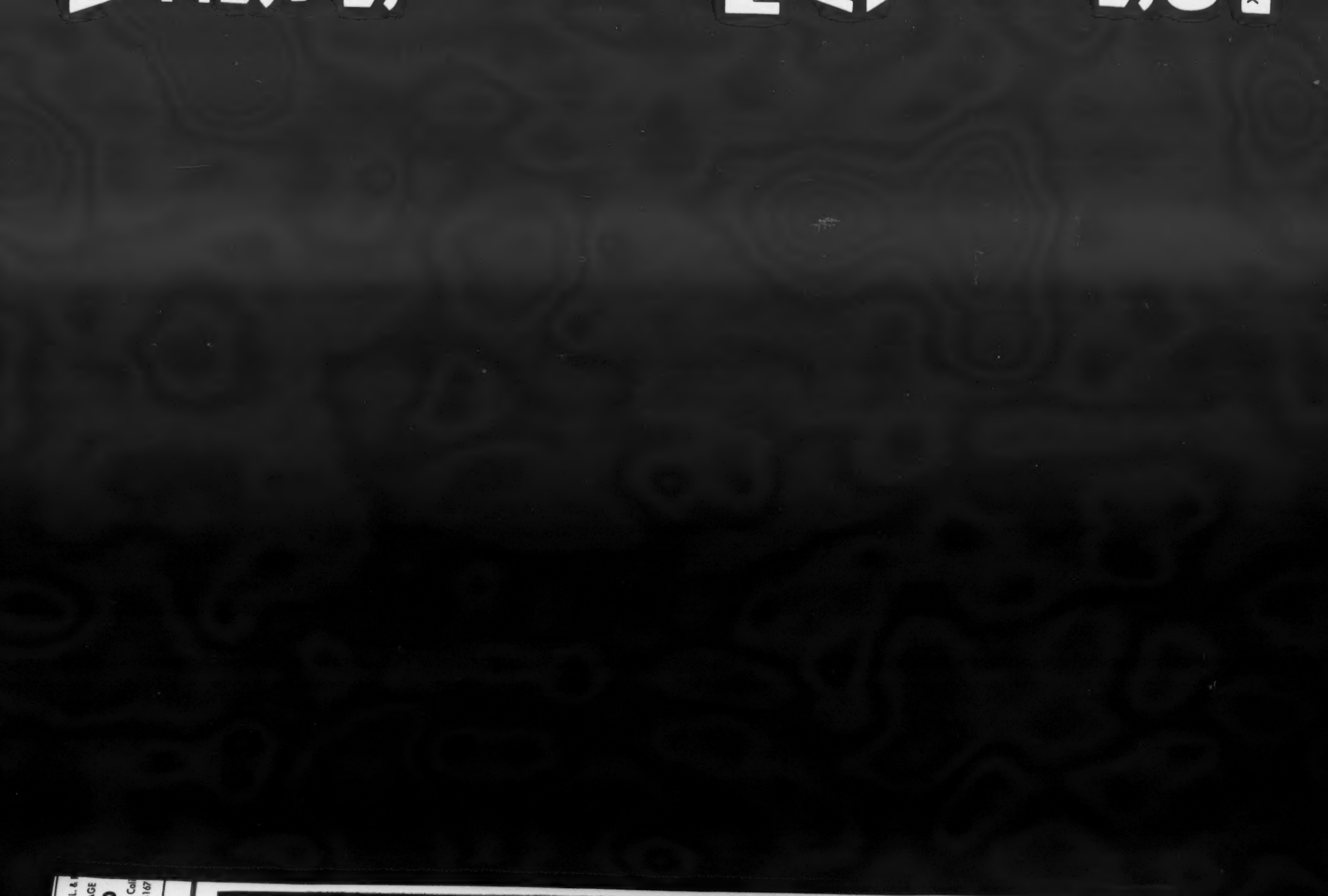
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